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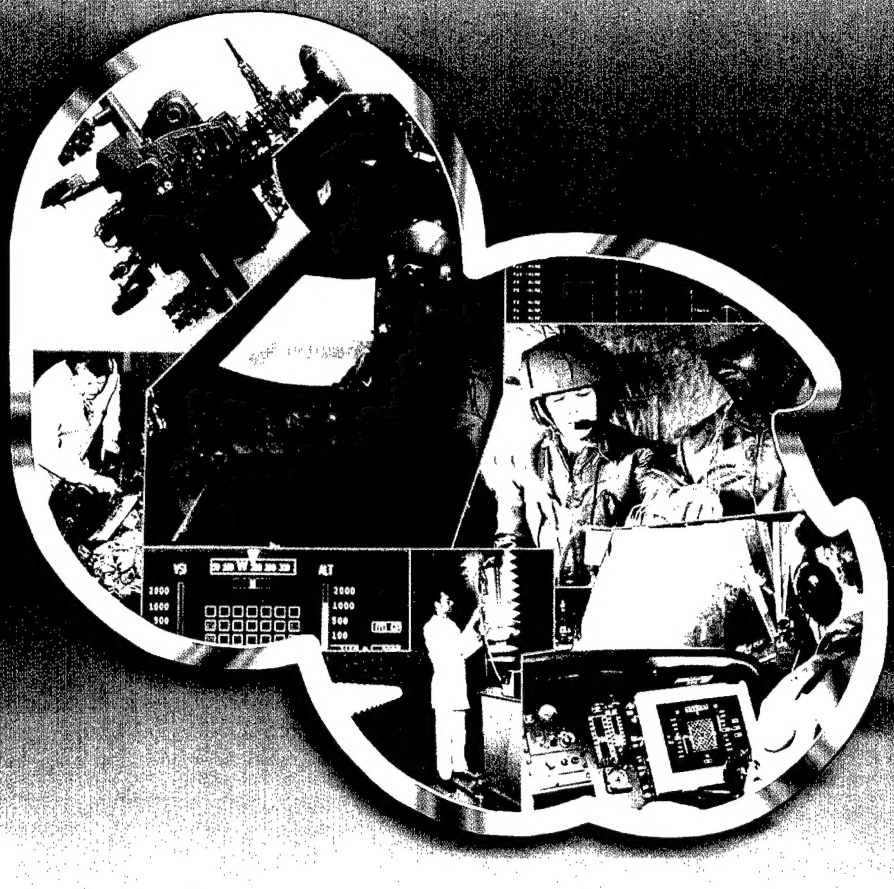
A Comparison of Visual Fields with Fixed and Moving Fixation Points (Reprint)

by William E. McLean



Aircrew Health and Performance Division

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Four procedures were used to measure the extent of the detection fields of four primary meridians of the binocular visual fields of four subjects. Procedures I (Moving Target) used a horizontally moving target and a stationary fixation point. Procedure II (Fixed Target) used a stationary target and a horizontally moving fixation point. Procedure III (Saccadic Move) used a saccadic eye movement between two stationary horizontal fixation points and a stationary target. Procedure IV (Flashed Target) used a stationary fixation point and a .6 second flashed target. The results from the dynamic procedures (I and II) and the two static procedures (III and IV) were very similar for each subject. In the dynamic procedures, the relationship between a change in contrast and an equivalent change in velocity tends to support Bloch's Law (IxT=C) between 2 deg/s and 20 deg/s for a given retinal location. The relationship between the reciprocal of relative single glimpse probability of four subjects measured in this study and the mean detection times for comparable stimuli taken from Krendel and Wodinsky's Study (1960) appear to be linear and highly correlated (.92 to .99). Volume I of this report details the technical report and volume II contains the appendices.

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APPENDIX A

Equipment and Model Numbers

APPENDIX A

EQUIPMENT AND MODEL NUMBERS

1. Wavetek Sweep Generator, Model 184
2. General Scanning Inc., CCX-100 Scanner Control Amplifier
3. General Scanning Inc., G-300 PD Optical Scanner
4. Uniblitz Shutter Timing and Drive Unit, Model Number 310B
5. Uniblitz Shutter
6. Kodak Ektagraphic RA-960 Projector with zoom lens (100 to 150 mm)
7. Kodak Ektagraphic AF-3 Projector with zoom lens (102 to 152 mm)
8. Digital Voltmeter (4.5 digits)
9. Neutral Density Filters (.1 log unit steps)
10. Pritchards Spectra Photometer (Model 1980A)
11. 500 Watt G.E. Incandescent Light Bulb
12. Sample hold electronic devices
13. 35 mm spot slides for 4.8 arcmin target
14. 180^{o} x 34^{o} screen with 3.05 meters (10 foot) radius primed with Nextel 915 (3 coats) and painted with 202-A10 white (3 coats)
15. Switch Box

APPENDIX B

Means, Standard Deviations, Correction Factors, and Calibration Values for Each Subject, Procedures, Meridian, Velocity, and Contrast Value

Subject # 2 B.M.
Procedure # 1
Contrast 68%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				1.333	1.106	.833	.532		
Volt S.D.	Sees to Top			.0435	.0704	.0331	.0839		
Degree Mean				16.46	13.65	10.28	6.57		
Degree S.D.				.537	.869	.409	1.036		
				90th Meridian					
Volt Mean	1.201	1.206	1.204	.998	.849	.680	.503		
Volt S.D.	.0097	.0263	.0340	.0484	.0390	.0564	.0274		
Degree Mean	14.83	14.89	14.86	12.32	10.48	8.40	6.21		
Degree S.D.	.120	.325	.420	.598	.481	.696	.338		
				0 Meridian					
Volt Mean	1.806	1.752	1.654	1.306	.588	.452	.316		
Volt S.D.	.0865	.0835	.0564	.1524	.0268	.0650	.0754		
Degree Mean	30.10	29.20	27.57	21.77	9.80	7.53	5.27		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	30.36	29.70	28.57	23.78	12.81	11.55	10.29		
Degree S.D.	1.442	1.392	.940	2.540	.447	1.083	1.257		
				180th Meridian					
Volt Mean	1.868	2.006	1.742	1.344	.534	.416	.238		
Volt S.D.	.1587	.0602	.0726	.1431	.0182	.0336	.0259		
Degree Mean	31.13	33.43	29.03	22.40	8.90	6.93	3.97		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	31.38	33.93	30.03	24.41	11.91	10.95	8.99		
Degree S.D.	2.645	1.003	1.210	2.385	.303	.560	.432		

Subject # 2 B.M.
Procedure #1
Contrast 54%

(Vertical) 1^0 = .081 Volts
(Horizontal) 1^0 = .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				1.113	.935	.765	.351		
Volt S.D.				.0301	.0490	.1224	.0302		
Degree Mean	Sees to Top			13.74	11.54	9.44	4.33		
Degree S.D.				.383	.605	1.511	.373		
				90th Meridian					
Volt Mean	1.092	1.076	.985	.783	.601	.522	.345		
Volt S.D	.0589	.0254	.0478	.0252	.0358	.0318	.0416		
Degree Mean	13.48	13.28	12.16	9.67	7.42	6.44	4.26		
Degree S.D.	.727	.314	.590	.311	.442	.393	.514		
				0 Meridian					
Volt Mean	1.268	1.180	1.060	.652	.470	.298	.178		
Volt S.D.	.0993	.0806	.1125	.0192	.0604	.1085	.0760		
Degree Mean	21.13	19.67	17.67	10.87	7.83	4.97	2.97		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	21.38	20.17	18.67	12.88	10.84	8.99	7.99		
Degree S.D.	1.655	1.343	1.875	.320	1.007	1.808	1.267		
				180th Meridian					
Volt Mean	1.340	1.294	.966	.568	.434	.296	.102		
Volt S.D.	.0566	.1064	.1309	.0390	.0456	.0639	.0773		
Degree Mean	22.33	21.57	16.10	9.47	7.23	4.93	1.70		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	22.58	22.07	17.10	11.48	10.24	8.95	6.72		
Degree S.D.	.943	1.773	2.182	.650	.760	1.065	1.288		

Subject # 2 B.M.
Procedure #1
Contrast 43%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.191	1.131	1.024	.879	.645	.395	.248		
Volt S.D.	.0153	.0173	.0365	.0246	.0505	.0880	.0282		
Degree Mean	14.70	13.96	12.64	10.85	7.96	4.88	3.06		
Degree S.D.	.189	.214	.451	.304	.623	1.086	.348		
				90th Meridian					
Volt Mean	1.013	.992	.871	.648	.431	.332	.274		
Volt S.D.	.0732	.0491	.0185	.0465	.0308	.0224	.0355		
Degree Mean	12.51	12.25	10.75	8.00	5.32	4.10	3.38		
Degree S.D.	.904	.606	.228	.574	.380	.277	.438		
				0 Meridian					
Volt Mean	.952	.868	.768	.612	.370	-.122	+.086		
Volt S.D.	.0383	.0773	.0630	.0502	.1277	.0676	.0744		
Degree Mean	15.87	14.47	12.80	10.20	6.17	-2.03	+1.43		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	16.12	14.97	13.80	12.21	9.18	6.05	3.59		
Degree S.D.	.550	1.288	1.050	.837	2.128	1.127	1.240		
				180th Meridian					
Volt Mean	.974	.834	.654	.478	.328	+.162	-.024		
Volt S.D.	.1609	.1528	.0546	.0517	.0487	.0295	.0963		
Degree Mean	16.23	13.90	10.90	7.97	5.47	+2.70	-.40		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	16.48	14.40	11.90	9.98	8.48	6.72	4.62		
Degree S.D.	2.817	2.547	.910	.862	.812	.492	1.605		

Subject # 2 B.M.
Procedure #1
Contrast 34%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.969	.972	.792	.533	.370	.157	.095		
Volt S.D.	.0474	.0248	.0257	.0393	.0359	.0361	.0373		
Degree Mean	11.96	12.00	9.78	6.58	4.57	1.94	1.17		
Degree S.D.	.585	.306	.317	.485	.443	.446	.460		
				90th Meridian					
Volt Mean	.839	.807	.661	.511	.312	.196	.180		
Volt S.D.	.0388	.0148	.0530	.0334	.0252	.0187	.0289		
Degree Mean	10.36	9.96	8.16	6.31	3.85	2.42	2.22		
Degree S.D.	.479	.183	.654	.412	.311	.231	.357		
				0 Meridian					
Volt Mean	.830	.814	.640	.452	.126	-.039	+.234		
Volt S.D.	.0418	.0786	.0612	.0926	.0666	.0883	.0555		
Degree Mean	13.83	13.57	10.67	7.53	2.10	-.65	+3.90		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	14.08	14.07	11.67	9.54	5.11	4.67	1.12		
Degree S.D.	.697	1.310	1.020	1.543	1.110	1.472	.925		
				180th Meridian					
Volt Mean	.712	.676	.568	.382	+.140	-.038	-.248		
Volt S.D.	.0259	.0856	.0593	.0164	.0534	.1274	.0497		
Degree Mean	11.87	11.27	9.47	6.37	+2.33	-.63	-4.13		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	12.12	11.77	10.47	8.38	5.34	3.39	.89		
Degree S.D.	.432	1.427	.988	.273	.890	2.123	.828		

Subject # 2 B.M.
Procedure #1
Contrast 27%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time=.251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.846	.773	.610	.292	.148	.119	.046		
Volt S.D.	.0502	.0392	.0379	.0319	.0217	.0270	.0306		
Degree Mean	10.44	9.54	7.53	3.60	1.83	1.47	.57		
Degree S.D.	.620	.484	.468	.394	.268	.333	.378		
				90th Meridian					
Volt Mean	.631	.636	.512	.267	.176	.117	.060		
Volt S.D.	.0206	.0362	.0560	.0340	.0175	.0270	.0141		
Degree Mean	7.79	7.85	6.32	3.30	2.17	1.44	.74		
Degree S.D.	.254	.447	.691	.420	.216	.333	.174		
				0 Meridian					
Volt Mean	.734	.606	.504	-.162	-.004	+.138	+.334		
Volt S.D.	.0279	.0439	.0537	.0531	.0207	.0444	.0829		
Degree Mean	12.23	10.10	8.40	-2.70	-.07	+2.30	+5.57		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	12.48	10.60	9.40	4.71	3.08	1.72	-.55		
Degree S.D.	.465	.732	.895	.885	.345	.740	1.382		
				180th Meridian					
Volt Mean	.634	.542	.402	.174	+.032	-.182	-.312		
Volt S.D.	.0358	.0634	.1003	.0847	.0614	.0409	.0466		
Degree Mean	10.57	9.03	6.70	2.90	+.53	-3.03	-5.20		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	10.82	9.53	7.70	4.91	3.54	.99	-.18		
Degree S.D.	.597	1.057	1.672	1.412	1.023	.682	.777		

Subject # 2 B.M.
Procedure # 2
Contrast 68%

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean					1.153	1.005	.705		
Volt S.D.	Sees at Top				.0356	.0705	.0530		
Degree Mean					15.37	13.40	9.40		
Degree S.D.					.475	.940	.707		
				90th Meridian					
Volt Mean	1.077	1.113	1.045	.899	.777	.667	.519		
Volt S.D.	.0685	.0239	.0566	.0371	.0431	.0679	.0406		
Degree Mean	14.36	14.84	13.93	11.99	10.36	8.89	6.92		
Degree S.D.	.913	.319	.755	.495	.575	.905	.541		
				0 Meridian					
Volt Mean	1.63	1.69	1.52	.77	.57	.33	.11		
Volt S.D.	.0555	.0767	.1564	.1065	.0527	.0335	.0421		
Degree Mean	27.17	28.17	25.33	12.83	9.50	5.50	1.83		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	27.42	28.67	26.33	14.84	12.51	9.52	6.85		
Degree S.D.	.925	1.278	2.607	1.775	.878	.558	.702		
				180th Meridian					
Volt Mean	1.881	1.864	1.712	1.298	.654	.416	.284		
Volt S.D.	.0658	.1372	.1228	.2549	.1798	.0577	.0994		
Degree Mean	31.35	31.07	28.53	21.63	10.90	6.93	4.73		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	31.60	31.57	29.53	23.64	13.91	10.95	9.75		
Degree S.D.	1.097	2.287	2.047	4.248	2.997	.962	1.657		

Subject # 2 B.M.
Procedure # 2
Contrast 54%

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0=.060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				1.012	.852	.682	.384		
Volt S.D.				0.400	.0296	.0909	.0679		
Degree Mean				13.49	11.36	9.09	5.12		
Degree S.D.				.533	.395	1.212	.905		
				90th Meridian					
Volt Mean	.978	.968	.901	.774	.577	.484	.320		
Volt S.D	.0307	.0177	.0484	.0300	.0251	.0312	.0335		
Degree Mean	13.04	.12.91	12.01	10.32	7.69	6.45	4.27		
Degree S.D.	4.09	.236	.645	.400	.335	.416	.447		
				0 Meridian					
Volt Mean	1.19	1.40	.76	.60	.34	+.16	-.04		
Volt S.D.	.2794	.1747	.0536	.0370	.0518	.0952	.0971		
Degree Mean	19.83	23.33	12.67	10.00	5.67	+2.67	-.67		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	20.08	23.83	13.67	12.01	8.68	6.67	4.35		
Degree S.D.	4.657	2.912	.893	.617	.863	1.587	1.618		
				180th Meridian					
Volt Mean	1.636	1.646	1.510	.688	.426	-.324	-.130		
Volt S.D.	.1659	.0321	.1198	.0687	.0385	.0493	.0949		
Degree Mean	27.27	27.43	25.17	11.47	7.10	-5.40	-2.17		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	27.52	27.93	26.17	13.48	10.11	9.42	7.19		
Degree S.D.	2.765	.535	1.997	1.145	.642	.822	1.582		

Subject # 2 B.M.
Procedure #1
Contrast 43%

(Vertical) 1°= .075 Volts
(Horizontal) 1°= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity °/Sec	1	2	4	8	12	16	20		
Volt Mean	1.044	1.036	.973	.819	.514	.366	.246		
Volt S.D.	.0395	.0343	.0199	.0664	.0720	.0306	.0603		
Degree Mean	13.92	13.81	12.97	10.92	6.85	4.88	3.28		
Degree S.D.	.527	.457	.265	.885	.960	.408	.804		
				90th Meridian					
Volt Mean	.806	.836	.801	.527	.450	.249	.209		
Volt S.D.	.0254	.0537	.0322	.0067	.0467	.0358	.0275		
Degree Mean	10.75	11.15	10.68	7.03	6.00	3.32	2.79		
Degree S.D.	.339	.716	.429	.089	.623	.477	.367		
				0 Meridian					
Volt Mean	.74	.75	.62	.30	+.25	-.01	-.18		
Volt S.D.	.0394	.0396	.0776	.0638	.0279	.0723	.0288		
Degree Mean	12.33	12.50	10.33	5.00	+4.17	-.17	-3.00		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	12.58	13.00	11.33	7.01	7.18	3.85	2.02		
Degree S.D.	.657	.660	1.293	1.063	.465	1.205	.480		
				180th Meridian					
Volt Mean	.892	.772	.910	.546	.284	-.148	+.026		
Volt S.D.	.0526	.0466	.1646	.1569	.0699	.0259	.1178		
Degree Mean	14.87	12.87	15.17	9.10	4.73	-2.47	+.43		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	15.12	13.37	16.17	11.11	7.74	6.49	4.59		
Degree S.D.	.877	.777	2.743	2.615	1.165	.432	1.963		

Subject # 2 B.M.
Procedure # 2
Contrast 34%

(Vertical) 1^0 = .075 Volts
(Horizontal) 1^0 = .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.873	.862	.845	.642	.425	.157	.117		
Volt S.D.	.0242	.0461	.0284	.0556	.0504	.0230	.0506		
Degree Mean	11.64	11.49	11.27	8.56	5.67	2.09	1.56		
Degree S.D.	.323	.615	.379	.741	.672	.307	.675		
				90th Meridian					
Volt Mean	.680	.656	.566	.409	.249	.201	.144		
Volt S.D.	.0338	.0324	.0496	.0633	.0282	.0590	.0200		
Degree Mean	9.07	8.75	7.55	5.45	3.32	2.68	1.92		
Degree S.D.	.451	.453	.661	.844	.376	.787	.267		
				0 Meridian					
Volt Mean	.74	.70	.59	.24	+.13	-.04	-.25		
Volt S.D.	.0167	.0230	.0559	.0728	.0832	.0862	.0467		
Degree Mean	12.33	11.67	9.83	4.00	+2.17	-.67	-4.17		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	12.58	12.17	10.83	6.01	5.18	3.35	.85		
Degree S.D.	.278	.383	.932	1.213	1.387	1.437	.778		
				180th Meridian					
Volt Mean	.734	.708	.588	.376	-.162	+.015	+.256		
Volt S.D.	.0055	.0402	.0356	.0876	.1154	.0507	.0740		
Degree Mean	12.23	11.80	9.80	6.27	-2.70	+.25	+4.27		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	12.48	12.30	10.80	8.28	5.71	3.77	.75		
Degree S.D.	.092	.670	.593	1.460	1.923	.845	1.233		

Subject # 2 B.M.
Procedure # 2
Contrast 27%

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .251 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.671	.682	.597	.256	.150	.106	.037		
Volt S.D.	.0188	.0250	.0500	.0370	.0562	.0297	.0272		
Degree Mean	8.95	9.09	7.96	3.41	2.00	1.41	.49		
Degree S.D.	.251	.333	.667	.493	.749	.396	.363		
				90th Meridian					
Volt Mean	.575	.538	.488	.256	.148	.103	.058		
Volt S.D.	.0260	.0286	.0385	.0453	.0388	.0167	.0261		
Degree Mean	7.67	7.17	6.51	3.41	1.97	1.37	.77		
Degree S.D.	.347	.381	.513	.604	.517	.223	.348		
				0 Meridian					
Volt Mean	.62	.55	.44	+.30	-.03	-.22	-.42		
Volt S.D.	.0415	.0394	.0654	.0913	.0409	.0778	.0422		
Degree Mean	10.33	9.17	7.33	+5.00	-.50	-3.67	-7.00		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	10.58	9.67	8.33	7.01	2.51	.35	-2.02		
Degree S.D.	.692	.657	1.090	1.522	.682	1.297	.703		
				180th Meridian					
Volt Mean	.620	.615	.464	.192	-.080	+.218	+.438		
Volt S.D.	.0600	.0327	.0532	.0876	.1160	.0522	.0581		
Degree Mean	10.33	10.25	7.73	3.20	-1.33	+3.63	7.30		
Reaction Correction Factor	.25	.50	1.00	2.01	3.01	4.02	5.02		
Corrected Degree Mean	10.58	10.75	8.73	5.21	4.34	.39	-2.28		
Degree S.D.	1.000	.545	.887	1.460	1.933	.870	.968		

Subject #2 B.M.
Procedure #3

(Vertical) 1^{o}=.070 Volts
(Horizontal) 1^{o}=.060 Volts

Contrast	68%	54%	43%	34%	27%				
			270th Meridian						
Volt Mean	1.014	.912	.707	.641	.395				
Volt S.D.	.0066	.0734	.0733	.0399	.0106				
Degree Mean	14.49	13.03	10.10	9.16	5.64				
Degree S.D.	.094	1.049	1.047	.570	.151				
			90th Meridian						
Volt Mean	.719	.622	.603	.484	.335				
Volt S.D.	.0159	.0260	.0148	.0397	.0289				
Degree Mean	10.27	8.89	8.61	6.91	4.79				
Degree S.D.	.227	.371	.211	.567	.413				
			0 Meridian						
Volt Mean	1.340	1.038	.830	.701	.609				
Volt S.D.	.0205	.1042	.0436	.0489	.0352				
Degree Mean	22.33	17.30	13.83	11.68	10.15				
Degree S.D.	.342	1.737	.727	.815	.587				
			180th Meridian						
Volt Mean	1.708	1.359	.848	.640	.565				
Volt S.D.	.1017	.0590	.1061	.0747	.0350				
Degree Mean	28.47	22.65	14.13	10.67	9.42				
Degree S.D.	1.695	.983	1.768	1.245	.583				

Subject #2 B.M.
Procedure #4

(vertical) 1^{o}=.075 Volts
(horizontal) 1^{o}=.060 Volts

Contrast	68%	54%	43%	34%	27%				
			270th Meridian						
Volt Mean	1.110	.790	.672	.656	.438				
Volt S.D.	.0500	.0996	.0404	.0236	.0324				
Degree Mean	14.80	10.53	8.96	8.75	5.84				
Degree S.D.	.667	1.328	.539	.315	.432				
			90th Meridian						
Volt Mean	.920	.713	.540	.489	.292				
Volt S.D.	.0030	.0594	.0438	.0088	.0462				
Degree Mean	12.27	9.51	7.20	6.52	3.89				
Degree S.D.	.040	.792	.584	.117	.616				
			0 Meridian						
Volt Mean	1.574	1.284	.863	.683	.623				
Volt S.D.	.1561	.2418	.0129	.0358	.0700				
Degree Mean	26.23	21.40	14.38	11.38	10.38				
Degree S.D.	2.602	4.030	.215	.597	1.167				
			180th Meridian						
Volt Mean	1.822	1.168	.731	.703	.625				
Volt S.D.	.1184	.2668	.0263	.0283	.0646				
Degree Mean	30.37	19.47	12.18	11.72	10.42				
Degree S.D.	1.973	4.447	.438	.472	1.077				

Subject # 1 D.F.
Procedure #1
Contrast 68%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .235 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				.999	.818	.475	.296		
Volt S.D.	Sees to Top			.0630	.0684	.0367	.0477		
Degree Mean				12.33	10.10	5.86	3.65		
Degree S.D.				.778	.844	.453	.589		
				90th Meridian					
Volt Mean		1.193	1.022	.712	.630	.372	.239		
Volt S.D.	Sees at bottom	.0322	.0148	.0549	.0253	.0237	.0135		
Degree Mean		14.73	12.62	8.79	7.78	4.59	2.95		
Degree S.D.		.398	.183	.678	.312	.293	.167		
				0 Meridian					
Volt Mean	.973	.778	.782	.622	.376	-.224	-.004		
Volt S.D.	.0556	.0653	.0530	.0462	.1077	.1161	.0265		
Degree Mean	16.21	12.97	13.03	10.37	6.27	3.73	.07		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	16.45	13.44	13.97	12.25	9.09	7.49	4.77		
Degree S.D.	.927	1.088	.883	.770	1.795	1.935	.442		
				180th Meridian					
Volt Mean	1.095	.842	.710	.526	+.324	+.040	-.010		
Volt S.D.	.1720	.0949	.0340	.1087	.0954	.0849	.0502		
Degree Mean	18.25	14.03	11.83	8.77	+5.40	+.67	-.17		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	18.49	14.50	12.77	10.65	8.22	4.43	4.53		
Degree S.D.	2.867	1.582	.567	1.812	1.590	1.415	.837		

Subject # J.D.P.
Procedure #1
Contrast 43%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .235 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.076	1.071	.888	.474	.185	.095	.066		
Volt S.D.	.0211	.0334	.0344	.0184	.0299	.0163	.0366		
Degree Mean	13.28	13.22	10.96	5.85	2.28	1.17	.81		
Degree S.D.	.260	.412	.425	.227	.369	.201	.452		
				90th Meridian					
Volt Mean	.991	.956	.855	.401	.242	.108	.081		
Volt S.D.	.0360	.0360	.0221	.0182	.0248	.0168	.0367		
Degree Mean	12.23	11.80	10.56	4.95	2.99	1.33	1.00		
Degree S.D.	.444	.444	.273	.225	.306	.207	.453		
				0 Meridian					
Volt Mean	.756	.639	.591	.307	-.143	+.082	+.162		
Volt S.D.	.0620	.0976	.0258	.0307	.0510	.0690	.0774		
Degree Mean	12.60	10.65	9.85	5.12	-2.38	+1.37	+2.70		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	12.84	11.12	10.79	7.00	5.20	2.39	2.00		
Degree S.D.	1.033	1.627	.430	.512	.850	1.150	1.290		
				180th Meridian					
Volt Mean	.674	.668	.531	.254	+.047	-.062	-.158		
Volt S.D.	.0579	.0244	.0795	.0623	.0619	.0345	.1103		
Degree Mean	11.23	11.13	8.85	4.23	+.78	-1.03	-2.63		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	11.47	11.60	9.79	6.11	3.60	2.73	2.07		
Degree S.D.	.965	.407	1.33	1.04	1.03	.575	1.838		

Subject 1 D.P.
Procedure #1
Contrast 27%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .235 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.656	.561	-.196	-.108	-.0202	Can't See			
Volt S.D.	.0326	.0326	.0279	.0175	.0186	"			
Degree Mean	8.10	6.93	2.42	1.33	.25				
Degree S.D.	.402	.402	.344	.216	.230				
				90th Meridian					
Volt Mean	.585	.504	+.269	+.094	+.040	Can't See			
Volt S.D.	.0251	.0541	.0198	.0180	.0221				
Degree Mean	7.22	6.22	3.32	1.16	.49				
Degree S.D.	.310	.668	.244	.222	.273				
				0 Meridian					
Volt Mean	.529	.507	.325	-.120	+.125	Can't See			
Volt S.D.	.0527	.0638	.0502	.0735	.0339	Can't See			
Degree Mean	8.82	8.45	5.42	-2.00	+2.08				
Reaction Correction Factor	.24	.47	.94	1.88	2.82				
Corrected Degree Mean	9.06	8.92	6.36	3.88	0.74				
Degree S.D.	.878	1.063	.837	1.225	.565				
				180th Meridian					
Volt Mean	.481	.394	.188	+.048	-.120	Can't See			
Volt S.D.	.0581	.0714	.0360	.0526	.1089				
Degree Mean	8.02	6.57	3.13	+.80	-2.00				
Reaction Correction Factor	.24	.47	.94	1.88	2.82				
Corrected Degree Mean	8.26	7.04	4.07	2.68	.82				
Degree S.D.	.968	1.190	.600	.877	1.815				

Subject # 1 D.P.
Procedure # 2
Contrast 68%*

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .235 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean					+1.171	.961	.807		
Volt S.D.	Sees at Top				.0157	.0202	.0253		
Degree Mean					15.61	12.81	10.76		
Degree S.D.					.209	.267	.337		
				90th Meridian		*(Actual 83% Contrast)			
Volt Mean			1.258	1.008	.864	.772	.464		
Volt S.D.	Sees at Bottom		.0185	.0443	.0707	.0361	.0389		
Degree Mean			16.77	13.44	11.52	10.29	6.19		
Degree S.D.			.247	.591	.943	.481	.519		
				0 Meridian					
Volt Mean	1.073	1.043	.897	.628	.554	.178	.023		
Volt S.D.	.0482	.0779	.0274	.0308	.0954	.0252	.0823		
Degree Mean	17.88	17.38	14.95	10.47	9.23	2.97	.38		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	18.12	17.85	15.89	12.35	12.05	6.73	5.08		
Degree S.D.	.8033	1.298	.457	.513	1.590	.420	1.372		
				180th Meridian					
Volt Mean	1.046	.900	.851	.699	.403	-.161	+.091		
Volt S.D.	.0303	.0280	.0463	.0432	.1219	.0643	.0826		
Degree Mean	17.43	15.00	14.18	11.65	6.72	-2.68	+1.52		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	17.67	15.47	15.12	13.53	9.54	6.44	3.18		
Degree S.D.	.505	.467	.772	.720	2.032	1.072	1.377		

Subject # 1 D.P.
Procedure # 2
Contrast 54%

(Vertical) 1^0 = .075 Volts
(Horizontal) 1^0 = .060 Volts
Reaction Time= .235 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean									
Volt S.D.									
Degree Mean									
Degree S.D.									
				90th Meridian					
Volt Mean									
Volt S.D.									
Degree Mean									
Degree S.D.									
				0 Meridian					
Volt Mean	.891	.865	.806	.583	.361	+.023	-.120		
Volt S.D.	.0460	.0524	.0427	.0670	.0668	.0421	.0180		
Degree Mean	14.85	14.42	13.43	9.72	6.02	+.38	-.30		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	15.09	14.89	14.37	11.60	8.84	4.14	4.40		
Degree S.D.	.767	.873	.712	1.117	1.113	.702	.300		
				180th Meridian					
Volt Mean	.859	.777	.758	.585	.294	-.175	+.0365		
Volt S.D.	.0335	.0599	.0451	.0477	.1677	.1439	.0617		
Degree Mean	14.32	12.95	12.63	9.75	4.99	-2.92	+.61		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	14.56	13.42	13.57	11.63	7.81	6.68	4.09		
Degree S.D.	.558	.998	.752	.795	2.795	2.398	1.028		

Subject # 1
Procedure # 2
Contrast 43%

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .235 Secs

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.127	1.154	1.052	.810	.516	.233	.202		
Volt S.D.	.0141	.0325	.0432	.0315	.0420	.0326	.0222		
Degree Mean	15.03	15.39	14.03	10.80	6.88	3.11	2.69		
Degree S.D.	.188	.433	.576	.420	.560	.435	.296		
				90th Meridian					
Volt Mean	.953	.935	.847	.560	.341	.255	.185		
Volt S.D.	.0248	.0243	.0334	.0583	.0301	.0230	.0349		
Degree Mean	12.71	12.47	11.29	7.47	4.55	3.40	2.47		
Degree S.D.	.331	.324	.445	.777	.401	.307	.465		
				0 Meridian					
Volt Mean	.836	.778	.714	.508	.262	+.032	-.126		
Volt S.D.	.0449	.0191	.0611	.0794	.0998	.0514	.0599		
Degree Mean	13.93	12.97	11.90	8.47	4.37	+.53	-2.10		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	14.17	13.44	12.84	10.35	7.19	4.29	2.60		
Degree S.D.	.748	.318	1.018	1.323	1.663	.857	.998		
				180th Meridian					
Volt Mean	.882	.767	.676	.519	.328	-.015	+.069		
Volt S.D.	.0358	.0791	.0520	.0555	.0752	.0917	.0641		
Degree Mean	14.70	12.78	11.27	8.65	5.47	-.25	+1.15		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	14.94	13.25	12.21	10.53	8.29	4.01	3.55		
Degree S.D.	.597	1.318	.867	.917	1.253	1.528	1.068		

Subject # I.D.P.
Procedure # 2
Contrast 34%

(Vertical) 1^0 = .075 Volts
(Horizontal) 1^0 = .060 Volts
Reaction Time = .235 Secs

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.024	.967	.772	.446	.200	.150	.091		
Volt S.D.	.0334	.0154	.0363	.0487	.0407	.0168	.0364		
Degree Mean	13.65	12.89	10.29	5.95	2.67	2.00	1.21		
Degree S.D.	.445	.205	.484	.649	.543	.224	.485		
				90th Meridian					
Volt Mean	.797	.726	.669	.307	.150	.080	.017		
Volt S.D.	.0193	.0195	.0240	.0147	.0268	.0125	.0153		
Degree Mean	10.63	9.68	8.92	4.09	2.00	1.07	.23		
Degree S.D.	.257	.260	.320	.196	.357	.167	.204		
				0 Meridian					
Volt Mean	.707	.711	.554	.369	+.084	-.002	-.070		
Volt S.D.	.0381	.0603	.0395	.0811	.1111	.0176	.0683		
Degree Mean	11.78	11.85	9.23	6.15	+1.40	-.03	-1.17		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	12.02	12.32	10.17	8.03	4.22	3.73	3.53		
Degree S.D.	.635	1.005	.658	1.352	1.852	.293	1.138		
				180th Meridian					
Volt Mean	.746	.684	.601	.252	-.136	+.024	+.080		
Volt S.D.	.0168	.0703	.0574	.0589	.1098	.1329	.1454		
Degree Mean	12.43	11.40	10.02	4.20	-2.27	+.40	+1.33		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	12.67	11.87	10.96	6.08	5.09	3.36	3.37		
Degree S.D.	.280	1.172	.957	.982	1.83	2.215	2.423		

Subject # 1 D.P.
Procedure # 2
Contrast 27*

(Vertical) 1^{0}= .075 Volts
(Horizontal) 1^{0}= .060 Volts
Reaction Time= .235 secs

				270th Meridian		*(Actual 31% Contrast)			
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.895	.860	.656	.354	.215	.163	.120		
Volt S.D.	.0269	.0366	.0349	.0456	.0370	.0535	.0277		
Degree Mean	11.93	11.47	8.75	4.72	2.87	2.17	1.60		
Degree S.D.	.359	.488	.465	.608	.493	.713	.369		
				90th Meridian		*(Actual 31% Contrast)			
Volt Mean	.800	.755	.555	.358	.297	.148	.064		
Volt S.D.	.0467	.0208	.0590	.0136	.0165	.0388	.0273		
Degree Mean	10.67	10.07	7.40	4.77	3.96	1.97	.85		
Degree S.D.	.623	.277	.787	.181	.220	.517	.364		
				0 Meridian					
Volt Mean	.625	.555	.509	.366	+.072	-.096	-.148		
Volt S.D.	.0182	.0448	.0319	.1573	.0629	.0347	.1286		
Degree Mean	10.83	9.25	8.48	6.10	+1.20	-1.60	-2.47		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	11.07	9.72	9.42	7.98	4.02	2.16	2.23		
Degree S.D.	.303	.747	.532	2.622	1.048	.578	2.143		
				180th Meridian					
Volt Mean	.607	.621	.544	.271	-.091	+.039	+.319		
Volt S.D.	.0392	.0349	.0858	.0905	.0568	.0787	.1427		
Degree Mean	10.12	10.17	9.07	4.52	-1.52	+.65	+5.32		
Reaction Correction Factor	.24	.47	.94	1.88	2.82	3.76	4.70		
Corrected Degree Mean	10.36	10.64	10.01	6.40	4.34	3.11	-.62*		
Degree S.D.	.653	.582	1.430	1.508	.947	1.312	2.378		

Subject 1 D.P.
Procedure #3

(Vertical) 1° = .070 Volts
(Horizontal) 1° = .060 Volts

Contrast	68%	54%	43%	34%	27%				
			270th Meridian						
Volt Mean	.845	.569	.385	.268	.194				
Volt S.D.	.0105	.0304	.0456	.0261	.0145				
Degree Mean	12.07	8.13	5.50	3.83	2.77				
Degree S.D.	.150	.434	.651	.373	.207				
			90th Meridian						
Volt Mean	.784	.674	.465	.291	.252				
Volt S.D.	.0443	.0171	.0333	.0179	.0318				
Degree Mean	11.20	9.63	6.64	4.16	3.60				
Degree S.D.	.633	.244	.476	.256	.454				
			0 Meridian						
Volt Mean	1.046	.861	.668	.526	.379				
Volt S.D.	.0232	.0293	.0396	.0360	.0221				
Degree Mean	17.43	14.35	11.13	8.77	6.32				
Degree S.D.	.383	.488	.660	.600	.368				
			180th Meridian						
Volt Mean	.843	.662	.566	.352	.153				
Volt S.D.	.0447	.0077	.1025	.0363	.0249				
Degree Mean	14.05	11.03	9.43	5.87	2.55				
Degree S.D.	.745	.128	1.708	.605	.415				

Subject #1 D.P.
Procedure #4

(Vertical) 1^{o}=.070 Volts
(Horizontal) 1^{o}=.060 Volts

Contrast	68%	54%	43%	34%	27%				
			270th Meridian						
Volt Mean	.938	.690	.612	.466	.334				
Volt S.D.	.0220	.0308	.0244	.0208	.0483				
Degree Mean	13.40	9.86	8.74	6.66	4.77				
Degree S.D.	.314	.440	.349	.297	.690				
			90th Meridian						
Volt Mean	.776	.535	.383	.281	.214				
Volt S.D.	.0239	.0299	.0135	.0127	.0466				
Degree Mean	11.09	7.64	5.47	4.01	3.06				
Degree S.D.	.341	.427	.193	.181	.666				
			0 Meridian		N=10				
Volt Mean	.842	.793	.702	.594	.407				
Volt S.D.	.0710	.0313	.0421	.0146	.0162				
Degree Mean	14.03	13.22	11.70	9.90	6.78				
Degree S.D.	1.183	.522	.702	.243	.270				
			180th Meridian						
Volt Mean	.874	.766	.644	.549	.425				
Volt S.D.	.0244	.0309	.0337	.0395	.0414				
Degree Mean	14.57	12.77	10.73	9.15	7.08				
Degree S.D.	.407	.515	.562	.658	.690				

Subject # 4 RH
Procedure #1
Contrast 68%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .237 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				1.078		.643			
Volt S.D.	Sees to top			.0619		.0299			
Degree Mean				13.31		7.94			
Degree S.D.				.764		.369			
				90th Meridian					
Volt Mean				1.023		.645			
Volt S.D				.0835		.0448			
Degree Mean	Sees at Bottom			12.63		7.96			
Degree S.D.				1.031		.553			
				0 Meridian					
Volt Mean	1.70	1.76	1.70	1.55		.48			
Volt S.D.	.0378	.0589	.0586	.1374		.0568			
Degree Mean	28.33	29.33	28.33	25.83		8.00			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	28.57	29.80	29.28	27.73		11.79			
Degree S.D.	.630	.982	.977	2.290		.947			
				180th Meridian					
Volt Mean	1.67	1.63	1.60	1.06		.46			
Volt S.D.	.0920	.0769	.1285	.2475		.1178			
Degree Mean	27.83	27.17	26.67	17.67		7.67			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	28.07	27.64	27.62	19.57		11.46			
Degree S.D.	1.533	1.282	2.142	4.125		1.963			

Subject # 4 RH
Procedure #1
Contrast 43%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .237 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.107	1.080	.912	.519		.171			
Volt S.D.	.0513	.0683	.0529	.0823		.0326			
Degree Mean	13.67	13.33	11.26	6.41		2.11			
Degree S.D.	.633	.843	.653	1.016		.402			
				90th Meridian					
Volt Mean	.963	1.020	.894	.643		.310			
Volt S.D.	.0546	.0446	.0487	.0303		.0145			
Degree Mean	11.89	12.59	11.04	7.94		3.83			
Degree S.D.	.674	.551	.601	.374		.179			
				0 Meridian					
Volt Mean	1.35	.99	.87	.63	.09				
Volt S.D.	.3306	.0662	.0911	.0910		.1295			
Degree Mean	22.50	16.50	14.50	10.50		1.50			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	22.74	16.97	15.45	12.40		5.29			
Degree S.D.	5.510	1.103	1.518	1.517		2.158			
				180th Meridian					
Volt Mean	1.26	1.34	.74	.51		.21			
Volt S.D.	.1582	.0568	.1009	.0466	.1380				
Degree Mean	21.00	22.33	12.33	8.50		3.50			
Reaction Correction Factor	.24	.47	.95	1.90		3.79			
Corrected Degree Mean	21.24	22.80	13.28	10.40		7.29			
Degree S.D.	2.637	.947	1.682	.777		2.300			

Subject # 4 RH
Procedure #1
Contrast 27%

(Vertical) 1^0= .081 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .237 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.609	.499	.328	.112		1			
Volt S.D.	.0134	.0308	.0408	.0410		can't see			
Degree Mean	7.52	6.16	4.05	1.38					
Degree S.D.	.165	.380	.504	.506					
				90th Meridian					
Volt Mean	.627	.592	.364	.248		.0666			
Volt S.D.	.0274	.0474	.0409	.0356		.0509			
Degree Mean	7.74	7.31	4.49	3.06		.82			
Degree S.D.	.338	.585	.505	.440		.628			
				0 Meridian					
Volt Mean	.66	.60	.50	-.31		+.20			
Volt S.D.	.0620	.0877	.0785	.0820		.0899			
Degree Mean	11.00	10.00	8.33	-5.17		+3.33			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	11.24	10.47	9.28	7.07		.46			
Degree S.D.	1.033	1.462	1.308	1.367		1.498			
				180th Meridian					
Volt Mean	.64	.59	.52	+.19		-.23			
Volt S.D.	.0614	.0512	.0886	.0740		.1044			
Degree Mean	10.67	9.83	8.67	+3.17		-3.83			
Reaction Correction Factor	.24	.47	.95	1.90		3.79			
Corrected Degree Mean	10.91	10.30	9.62	5.07		-.04			
Degree S.D.	1.023	.853	1.477	1.233		1.740			

Subject # 4 RH
Procedure # 2
Contrast: 68%

(Vertical) 1^0=.075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .237 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean					1.106	.881	.767		
Volt S.D.	Sees at top				.0863	.0219	.0540		
Degree Mean					14.75	11.75	10.23		
Degree S.D.					1.151	.292	.720		
				90th Meridian					
Volt Mean					.968	.762	.626		
Volt S.D.	See at bottom				.0351	.0348	.0293		
Degree Mean					12.91	10.16	8.35		
Degree S.D.					.468	.464	.391		
				0 Meridian					
Volt Mean	1.68	1.63	1.50	1.35		.624			
Volt S.D.	.0864	.1352	.0850	.0923		.1150			
Degree Mean	28.00	27.17	25.00	22.50		10.40			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	28.24	27.64	25.95	24.40		14.19			
Degree S.D.	1.440	2.253	1.417	1.538		1.917			
				180th Meridian					
Volt Mean	1.84	1.76	1.57	1.52		.62			
Volt S.D.	.0856	.0657	.1439	.0564		.1338			
Degree Mean	30.67	29.33	26.17	25.33		10.33.			
Reaction Correction Factor	.24	.47	.95	1.90		3.79			
Corrected Degree Mean	30.91	29.80	27.12	27.23		14.12			
Degree S.D.	1.427	1.095	2.398	.940		2.230			

Subject # 4 RH
Procedure # 2
Contrast 43%

(Vertical) 1^0 = .075 Volts
(Horizontal) 1^0 = .060 Volts
Reaction Time= .237 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.064		1.125	.844		.574			
Volt S.D.	.0955		.0601	.0579		.0724			
Degree Mean	14.19		15.00	11.25		7.65			
Degree S.D.	1.273		.801	.772		.965			
				90th Meridian					
Volt Mean	1.054		1.038	.722		.494			
Volt S.D.	.0429		.0258	.0502		.0349			
Degree Mean	14.05		13.84	9.63		6.59			
Degree S.D.	.653		.344	.669		.465			
				0 Meridian					
Volt Mean	.94	1.03	.85	+.60		+.17			
Volt S.D.	.0579	.1841	.0110	.0554		.0354			
Degree Mean	15.67	17.17	14.17	-10.00		2.83			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	15.91	17.64	15.12	11.90		6.62			
Degree S.D.	.965	3.068	.183	.923		.590			
				180th Meridian					
Volt Mean	.86	1.19	.74	.61		.206			
Volt S.D.	.1280	.1500	.0872	.1172		.0684			
Degree Mean	14.33	19.83	12.33	10.17		3.43			
Reaction Correction Factor	.24	.47	.95	1.90		3.79			
Corrected Degree Mean	14.57	20.30	13.28	12.07		7.22			
Degree S.D.	2.133	2.500	1.453	1.953		1.140			

Subject # 4 RH
Procedure #2
Contrast 27%

(Vertical) 1^0= .075 Volts
(Horizontal) 1^0= .060 Volts
Reaction Time= .237 Volts

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.637	.699	.495	+.279		+.089			
Volt S.D.	.0622	.0624	.0431	.0275		.0189			
Degree Mean	8.49	9.32	6.60	3.72		1.19			
Degree S.D.	.829	.832	.575	.367		.252			
				90th Meridian					
Volt Mean	.697		.588	.454		.076			
Volt S.D.	.0430		.0578	.0556		.0234			
Degree Mean	9.29		7.84	6.05		1.01			
Degree S.D.	.573		.771	.741		.312			
				0 Meridian					
Volt Mean	.66	.57	.56	+.33		-.13			
Volt S.D.	.1018	.1137	.0554	.2043		.0444			
Degree Mean	11.00	9.50	9.33	+5.50		-2.17			
Reaction Correction Factor	.24	.47	.95	1.90	2.84	3.79	4.74		
Corrected Degree Mean	11.24	9.97	10.28	7.40		1.62			
Degree S.D.	1.697	1.895	.923	3.405		.740			
				180th Meridian					
Volt Mean	.70	.63	.59	-.36		+.038			
Volt S.D.	.0288	.0311	.0663	.0694		.1684			
Degree Mean	11.67	10.50	9.83	-6.00		+.63			
Reaction Correction Factor	.24	.47	.95	1.90		3.79			
Corrected Degree Mean	11.91	10.97	10.78	7.90		3.16			
Degree S.D.	.480	.518	1.105	1.157		2.807			

Subject #4 R.H.
Procedure #3

(Vertical) 1^0=.070 Volts
(Horizontal) 1^0=.060 Volts

Contrast	66 %	54 %	43 %	34 %	27 %				
			270th Meridian						
Volt Mean	1.037		.656		.378				
Volt S.D.	.0268		.0517		.0319				
Degree Mean	14.81		9.37		5.40				
Degree S.D.	.383		.739		.456				
			90th Meridian						
Volt Mean	.940		.565		.364				
Volt S.D.	.0450		.0211		.0268				
Degree Mean	13.43		8.07		5.20				
Degree S.D.	.643		.301		.383				
			0 Meridian						
Volt Mean	1.523		.786		.588				
Volt S.D.	.0541		.0403		.0266				
Degree Mean	25.38		13.10		9.80				
Degree S.D.	.902		.672		.443				
			180th Meridian						
Volt Mean	1.682		.769		.571				
Volt S.D.	.0663		.0427		.0312				
Degree Mean	28.03		12.82		9.52				
Degree S.D.	1.105		.712		5.20				

Subject #4 R.H.
Procedure #4

(Vertical) 1^0=.075 Volts
(Horizontal) 1^0=.060 Volts

	68 %	54 %	43 %	34 %	27 %				
Contrast			270th Meridian						
Volt Mean	.847		.576		.347				
Volt S.D.	0396		.0657		.0344				
Degree Mean	11.29		7.68		4.63				
Degree S.D.	.528		.876	.459					
			90th Meridian						
Volt Mean	.778		.578		.315				
Volt S.D.	.0773		.0231		.0235				
Degree Mean	10.37		7.71		4.20				
Degree S.D.	1.031		.308		.313				
			0 Meridian						
Volt Mean	1.495		.816		.467				
Volt S.D.	.0373		.0680		.0354				
Degree Mean	24.92		13.60		7.78				
Degree S.D.	.622		1.133		.590				
			180th Meridian						
Volt Mean	1.661		.733		.477				
Volt S.D.	.0648		.0347		.0583				
Degree Mean	27.68		12.22		7.95				
Degree S.D.	1.080		.578		.972				

Subject # 3 DH
Procedure # 1
Contrast 68%

(Vertical) 1^0= 081 volts
(Horizontal) 1^0= .060 volts
Reaction Time= .224 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	SEES TO TOP					.991			
Volt S.D.						.0715			
Degree Mean						12.23			
Degree S.D.						.883			
				90th Meridian					
Volt Mean	SEES TO BOTTOM			1.079		.747			
Volt S.D.				.0484		.0687			
Degree Mean				13.32		9.22			
Degree S.D.				.598		.848			
				0 Meridian					
Volt Mean	1.742		2.048	1.504		.644			
Volt S.D.	.2991		.1597	.1405		.0865			
Degree Mean	29.03		34.13	25.07		10.73			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	29.25		35.03	26.86		14.31			
Degree S.D.	4.985	2.662	2.342			1.442			
				180th Meridian					
Volt Mean	1.898	2.082	1.950	1.296		.604			
Volt S.D.	.1047	.0540	.1512	.1890		.0241			
Degree Mean	31.63	34.70	32.50	21.60		10.07			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	31.85	35.15	33.40	23.39		13.65			
Degree S.D.	1.741	.900	2.520	3.150		.402			

Subject # 3 DH
Procedure # 1
Contrast 43%

(Vertical) 1^0= .081 volts
(Horizontal) 1^0=.060 volts
Reaction Time= .224 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.185		1.126	.875		.549			
Volt S.D.	.0478		.0505	.0345		.0483			
Degree Mean	14.63		13.90	10.80		6.78			
Degree S.D.	.590		.623	.426		.596			
				90th Meridian					
Volt Mean	.932		.896	.829		.435			
Volt S.D.	.0504		.0372	.0474		.0559			
Degree Mean	11.51		11.06	10.23		5.37			
Degree S.D.	.622		.459	.585		.690			
				0 Meridian					
Volt Mean	.966		.882	.590		.306			
Volt S.D.	.0838		.0342	.0608		.0378			
Degree Mean	16.10		14.70	9.83		5.10			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	16.32		15.60	11.62		8.68			
Degree S.D.	1.397		.570	1.013		.630			
				180th Meridian					
Volt Mean	.868		.768	.479		.234			
Volt S.D.	.0383		.0466	.1060		.0614			
Degree Mean	14.47		12.80	7.98		3.90			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	14.69		13.70	9.77		7.48			
Degree S.D.	.638		.777	1.767		1.023			

Subject # 3 DH
Procedure # 1
Contrast 27%

(Vertical) 1^0= .081 volts
(Horizontal) 1^0= .060 volts
Reaction Time= .224 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	.841		.659	.518		.106			
Volt S.D.	.0321		.043	.0552		.0175			
Degree Mean	10.38		8.14	6.40		1.31			
Degree S.D.	.396		.532	.681		.216			
				90th Meridian					
Volt Mean	.793		.596	.453		.250			
Volt S.D.	.0617		.0717	.0445		.0474			
Degree Mean	9.79		7.36	5.59		3.09			
Degree S.D.	.774		.885	.549		.585			
				0 Meridian					
Volt Mean	.724		.592	.340		+.066			
Volt S.D.	.0351		.0890	.0930		.0207			
Degree Mean	12.07		9.87	5.67		1.10			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	12.29		10.77	7.46		2.48			
Degree S.D.	.585		1.483	1.550		345			
				180th Meridian					
Volt Mean	.690		.532	+.282		-.114			
Volt S.D.	.0464		.0432	.0427		.0677			
Degree Mean	11.50		8.87	+4.70		-1.90			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	11.72		9.77	6.49		1.68			
Degree S.D.	.773		.720	.712		1.128			

Subject # 3 DH
Procedure # 2
Contrast 68%

(Vertical) 1^0= .070 volts
(Horizontal) 1^0= .060 volts
Reaction Time= .224 sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean				.966	.861	.791	.671		
Volt S.D.	SEE TO BOTTOM			.0480	.0449	.0531	.0391		
Degree Mean				13.80	12.30	11.30	9.59		
Degree S.D.				.686	.641	.759	.559		
				90th Meridian					
Volt Mean					.940	.613	.521		
Volt S.D.	SEE TO TOP				.0356	.0214	.0479		
Degree Mean					13.43	8.76	7.44		
Degree S.D.					.509	.306	.684		
				0 Meridian					
Volt Mean	1.768		1.680	1.199		.602			
Volt S.D.	.0432		.0809	.1843		.1344			
Degree Mean	29.47		28.00	19.98		10.03			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	29.69		28.90	21.77		13.61			
Degree S.D.	.720		1.348	3.072		2.240			
				180th Meridian					
Volt Mean	2.041		1.910	1.615		.841			
Volt S.D.	.0853		.2046	.1381		.1486			
Degree Mean	34.02		31.83	26.92		14.02			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	34.24		32.73	28.71		17.60			
Degree S.D.	1.422		3.410	2.302		2.477			

Subject # 3 DH
Procedure # 2
Contrast 43%

(Vertical) 1^0= .070 volts
(Horizontal) 1^0= .060 volts
Reaction Time= .224 Sec

				270th Meridian					
Velocity ^{0}/Sec	1	2	4	8	12	16	20		
Volt Mean	1.113		.899	.649	.560	.470	.334		
Volt S.D.	.0460		.0273	.0452	.0398	.0482	.0482		
Degree Mean	15.90		12.84	9.27	8.00	6.71	4.77		
Degree S.D.	.657		.390	.646	.569	.689	.689		
				90th Meridian					
Volt Mean	.875	.867	.709	.564	.456	.341	.290		
Volt S.D.	.0831	.0740	.0740	.0389	.0380	.0542	.0187		
Degree Mean	12.50	12.39	10.13	8.06	6.51	4.87	4.14		
Degree S.D.	1.187	1.057	1.057	.556	.543	.774	.267		
				0 Meridian					
Volt Mean	.972		.883	.741		.374			
Volt S.D.	.1168		.0603	.1252		.0751			
Degree Mean	16.20		14.72	12.35		6.23			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	16.42		15.62	14.14		9.81			
Degree S.D.	1.947		1.005	2.086		1.252			
				180th Meridian					
Volt Mean	.888		.890	.683		.306			
Volt S.D.	.0457		.0559	.0921		.0867			
Degree Mean	14.80		14.83	11.38		5.10			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	15.02		15.73	13.17		8.68			
Degree S.D.	.762		.932	1.535		1.445			

Subject # 3 DH
Procedure # 2
Contrast 27%

(Vertical) 1^0 = .070 volts
(Horizontal) 1^0 = .060 volts
Reaction Time= .224 Sec

				270th Meridian					
Velocity^0/Sec	1	2	4	8	12	16	20		
Volt Mean	.789		.742	.496		.314			
Volt S.D.	.0252		.0253	.0434		.0748			
Degree Mean	11.27		10.60	7.09		4.49			
Degree S.D.	.360		.361	.620		1.069			
				90th Meridian					
Volt Mean	.690		.700	.534		.415			
Volt S.D.	.0093		.0210	.0512		.0375			
Degree Mean	9.86		10.00	7.63		5.93			
Degree S.D.	.133		.300	.731		.536			
				0 Meridian					
Volt Mean	.717		.624	.380		.164			
Volt S.D.	.0284		.0300	.0388		.1231			
Degree Mean	11.95		10.40	6.33		2.73			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	12.17		11.30	8.12		6.31			
Degree S.D.	.473		.500	.647		2.052			
				180th Meridian					
Volt Mean	.748		.664	-.442		-.030			
Volt S.D.	.0434		.0788	.1579		.0547			
Degree Mean	12.47		11.07	-7.37		-.50			
Reaction Correction Factor	.22	.45	.90	1.79	2.69	3.58	4.48		
Corrected Degree Mean	12.69		11.97	8.16		4.08			
Degree S.D.	.723		1.313	2.632		.912			

Subject # 3 D.H.
Procedure # 3

(Vertical) 1^0 = .070 volts
(Horizontal) 1^0 = .060 volts

Contrast	68%	54 %	43 %	34 %	27 %				
			270th Meridian						
Volt Mean	.913	.790	.647	.450	.254				
Volt S.D.	.0828	.0205	.0338	.0729	.0438				
Degree Mean	13.04	11.29	9.24	6.43	3.63				
Degree S.D.	1.183	.293	.483	1.041	.626				
			90th Meridian						
Volt Mean	.667	.562	.537	.349	.287				
Volt S.D.	.0387	.0422	.0262	.0416	.0210				
Degree Mean	9.53	8.03	7.67	4.99	4.10				
Degree S.D.	.553	.603	.374	.594	.300				
			0 Meridian						
Volt Mean	.829	.767	.623	.474	.260				
Volt S.D.	.0482	.0238	.0276	.0586	.0295				
Degree Mean	13.82	12.78	10.38	7.90	4.33				
Degree S.D.	.803	.397	.460	.977	.492				
			180th Meridian						
Volt Mean	.901	.755	.644	.539	.417				
Volt S.D.	.0454	.0389	.0350	.0336	.0354				
Degree Mean	15.02	12.58	10.73	8.98	6.95				
Degree S.D.	.757	.648	.583	.560	.590				

Subject # 3 DH
Procedure # 4

(Vertical) 1^0 = .070 volts
(Horizontal) 1^0 = .060 volts

Contrast	68 %	54 %	43 %	34 %	27 %				
			270th Meridian						
Volt Mean	.869		.607		.310				
Volt S.D.	.0284		.0355		.0289				
Degree Mean	12.41		8.67		4.43				
Degree S.D.	.406		.507		.413				
			90th Meridian						
Volt Mean	.828		.563		.328				
Volt S.D.	.0199		.0224		.0383				
Degree Mean	11.83		8.04		4.69				
Degree S.D.	.284		.320		.547				
			0 Meridian						
Volt Mean	.811		.706		.483				
Volt S.D.	.0779		.0743		.0667				
Degree Mean	13.52		11.77		8.05				
Degree S.D.	1.298		1.238		1.112				
			180th Meridian						
Volt Mean	.949		.760		.515				
Volt S.D.	.0317		.0374		.0404				
Degree Mean	15.82		12.67		8.58				
Degree S.D.	.528		.623		.673				

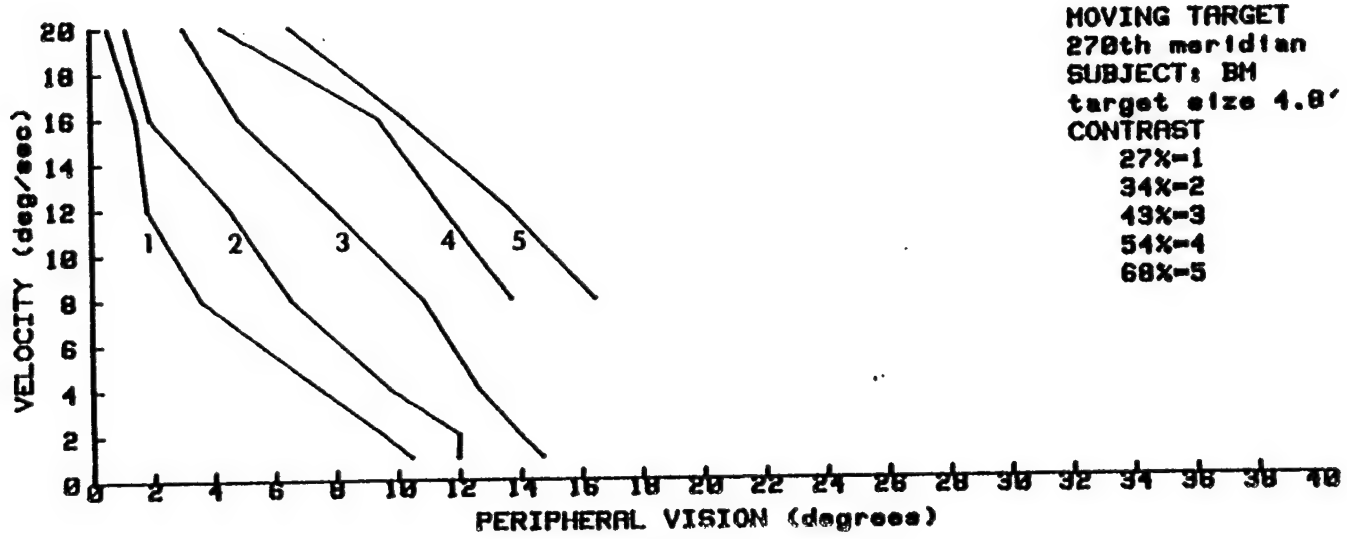
APPENDIX C

Meridian Plots for Each Subject and Procedures

Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: BM Procedure #1

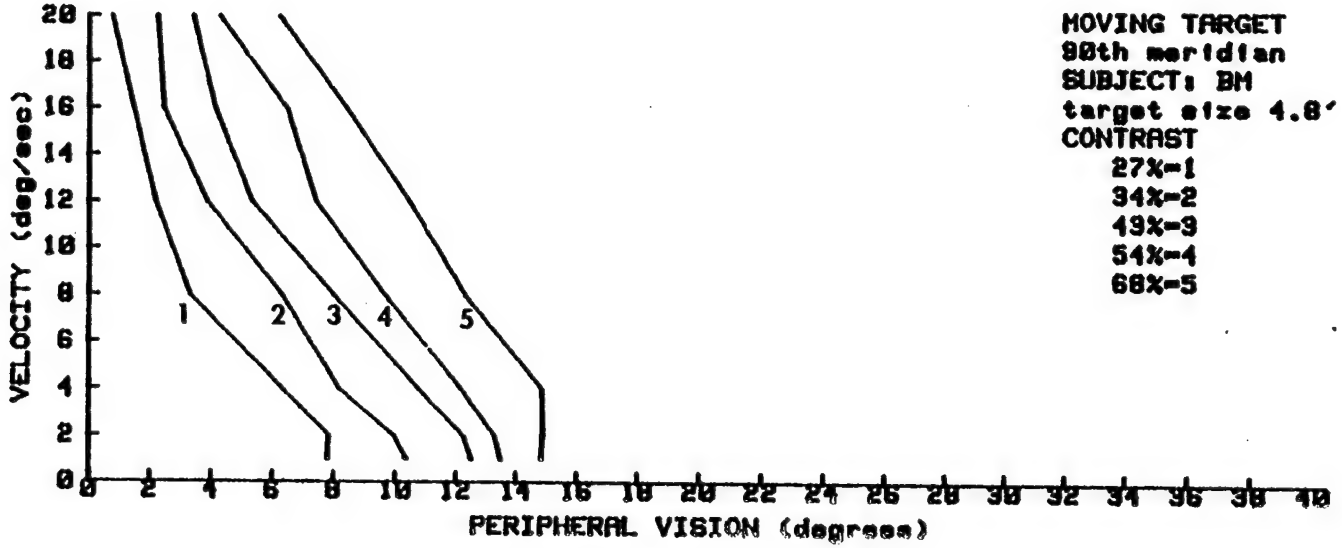
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				16.46	13.65	10.28	6.57
	S.D.				.537	.869	.409	1.036
Contrast 54%	mean				13.74	11.54	9.44	4.33
	S.D.				.383	.605	1.511	.373
Contrast 43%	mean	14.70	13.96	12.64	10.85	7.96	4.88	3.06
	S.D.	.189	.214	.451	.304	.623	1.086	.348
Contrast 34%	mean	11.96	12.00	9.78	6.58	4.57	1.94	1.17
	S.D.	.585	.306	.317	.485	.443	.446	.460
Contrast 27%	mean	10.44	9.54	7.53	3.60	1.83	1.47	.57
	S.D.	.620	.484	.468	.394	.268	.333	.378
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: BM Procedure #1

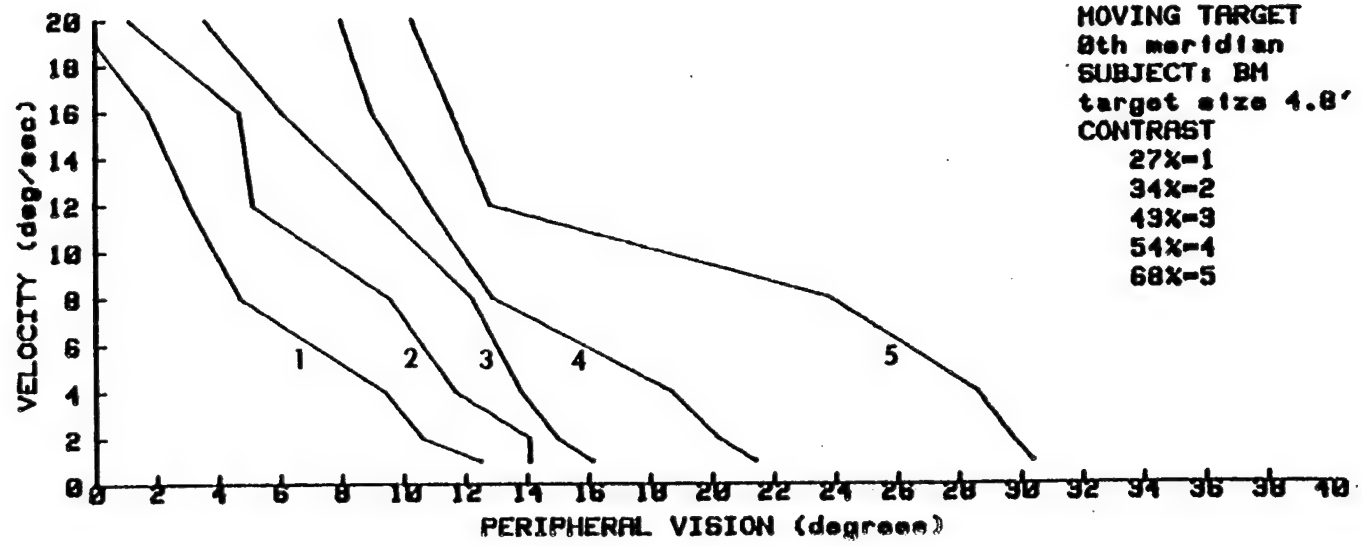
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	14.83	14.89	14.86	12.32	10.48	8.40	6.21
	S.D.	.120	.325	.420	.598	.481	.696	.338
Contrast 54%	mean	13.48	13.28	12.16	9.67	7.42	6.44	4.26
	S.D.	.727	.314	.590	.311	.442	.393	.514
Contrast 43%	mean	12.51	12.25	10.75	8.00	5.32	4.10	3.38
	S.D.	.904	.606	.228	.574	.380	.277	.438
Contrast 34%	mean	10.36	9.96	8.16	6.31	3.85	2.42	2.22
	S.D.	.479	.183	.654	.412	.311	.231	.357
Contrast 27%	mean	7.79	7.85	6.32	3.30	2.17	1.44	.74
	S.D.	.254	.447	.691	.420	.216	.333	.174
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: BM Procedure #1

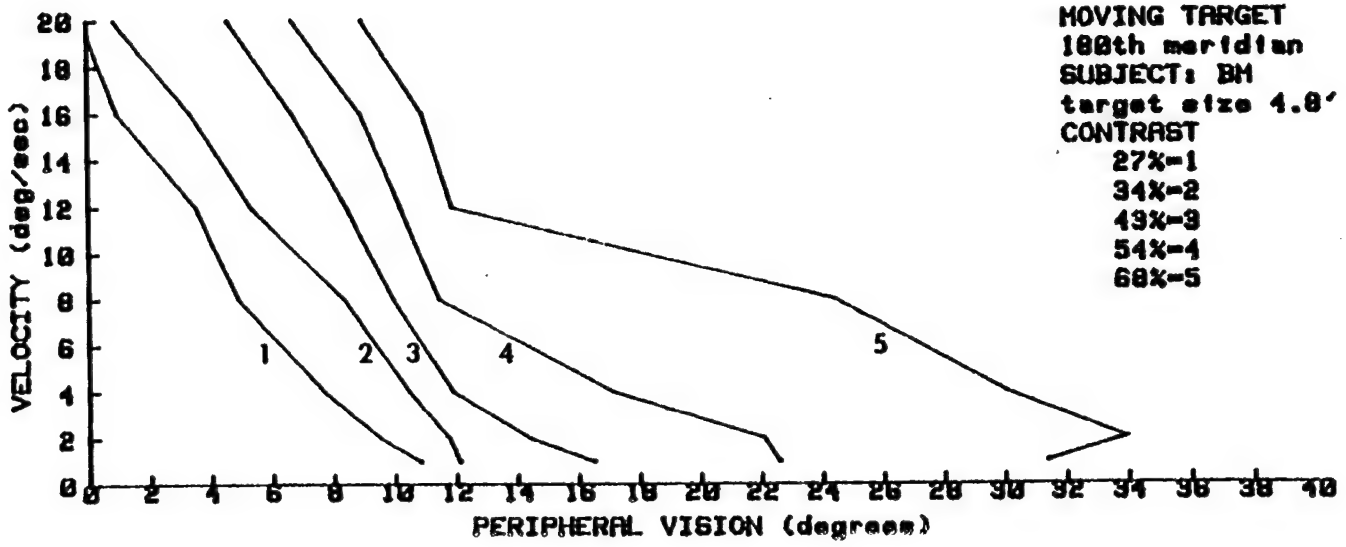
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	30.36	29.70	28.57	23.78	12.81	11.55	10.29
	S.D.	1.442	1.392	.940	2.540	.447	1.083	1.257
Contrast 54%	mean	21.38	20.17	18.67	12.88	10.84	8.99	7.99
	S.D.	1.655	1.343	1.875	.320	1.007	1.808	1.267
Contrast 43%	mean	16.12	14.97	13.80	12.21	9.18	6.05	3.59
	S.D.	.550	1.288	1.050	.837	2.128	1.127	1.240
Contrast 34%	mean	14.08	14.07	11.67	9.54	5.11	4.67	1.12
	S.D.	.697	1.310	1.020	1.543	1.110	1.472	.925
Contrast 27%	mean	12.48	10.60	9.40	4.71	3.08	1.72	-.55
	S.D.	.465	.732	.895	.885	.345	.740	1.382
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: BM Procedure #1

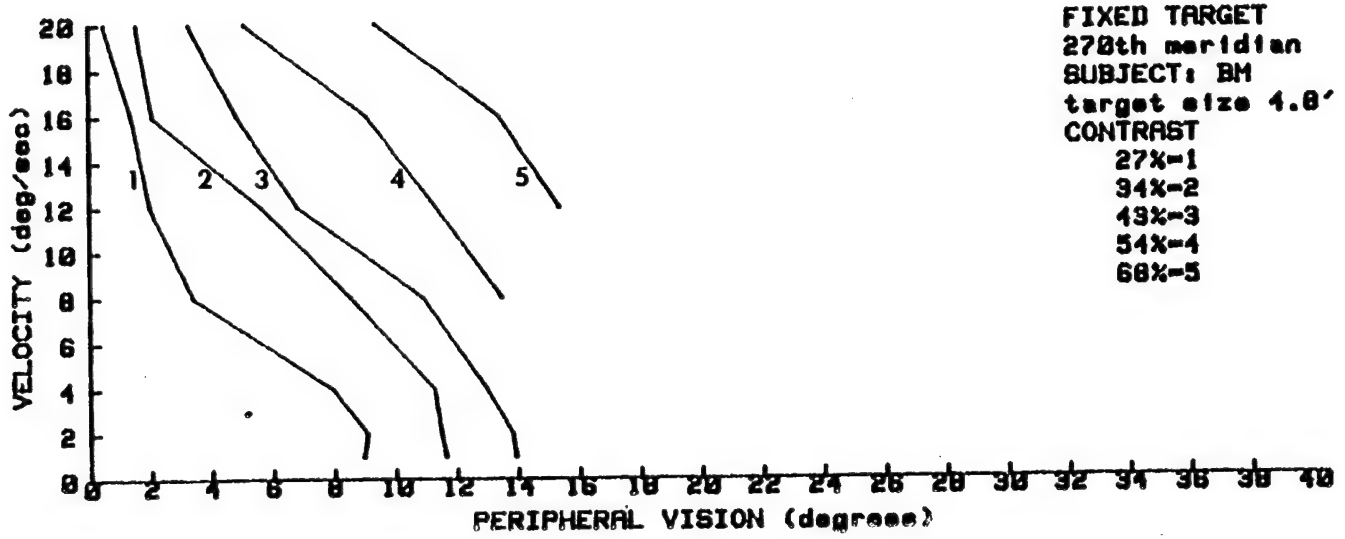
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	31.38	33.93	30.03	24.41	11.91	10.95	8.99
	S.D.	2.645	1.003	1.210	2.385	.303	.560	.432
Contrast 54%	mean	22.58	22.07	17.10	11.48	10.24	8.95	6.72
	S.D.	.943	1.773	2.182	.650	.760	1.065	1.288
Contrast 43%	mean	16.48	14.40	11.90	9.98	8.48	6.72	4.62
	S.D.	2.817	2.547	.910	.862	.812	.492	1.605
Contrast 34%	mean	12.12	11.77	10.47	8.38	5.34	3.39	.89
	S.D.	.432	1.427	.988	.273	.890	2.123	.828
Contrast 27%	mean	10.82	9.53	7.70	4.91	3.54	.99	-.18
	S.D.	.597	1.057	1.672	1.412	1.023	.682	.777
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: BM Procedure #2

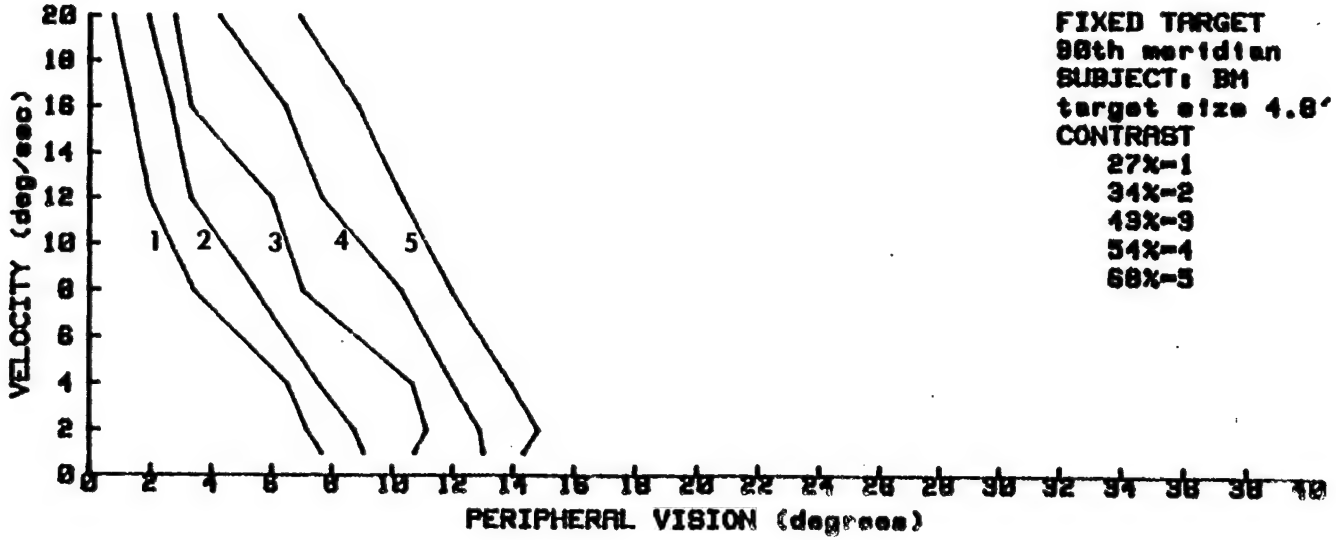
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean					15.37	13.40	9.40
	S.D.					.475	.940	.707
Contrast 54%	mean				13.49	11.36	9.09	5.12
	S.D.				.533	.395	1.212	.905
Contrast 43%	mean	13.92	13.81	12.97	10.92	6.85	4.88	3.28
	S.D.	.527	.457	.265	.885	.960	.408	.804
Contrast 34%	mean	11.64	11.49	11.27	8.56	5.67	2.09	1.56
	S.D.	.323	.615	.379	.741	.672	.307	.675
Contrast 27%	mean	8.95	9.09	7.96	3.41	2.00	1.41	.49
	S.D.	.251	.333	.667	.493	.749	.396	.363
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: BM Procedure #2

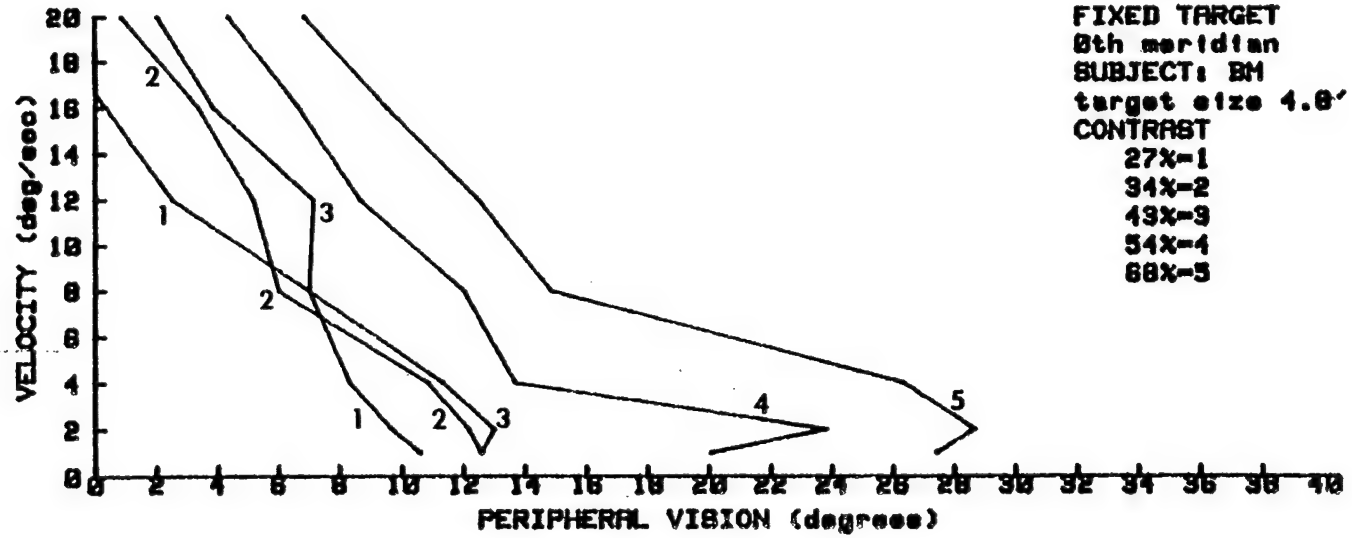
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	14.36	14.84	13.93	11.99	10.36	8.89	6.92
	S.D.	.913	.319	.755	.495	.575	.905	.541
Contrast 54%	mean	13.04	12.91	12.01	10.32	7.69	6.45	4.27
	S.D.	.409	.236	.645	.400	.335	.416	.447
Contrast 43%	mean	10.75	11.15	10.68	7.03	6.00	3.32	2.79
	S.D.	.339	.716	.429	.089	.623	.477	.367
Contrast 34%	mean	9.07	8.75	7.55	5.45	3.32	2.68	1.92
	S.D.	.451	.453	.661	.844	.376	.787	.267
Contrast 27%	mean	7.67	7.17	6.51	3.41	1.97	1.37	.77
	S.D.	.347	.381	.513	.604	.517	.223	.348
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: BM Procedure #2

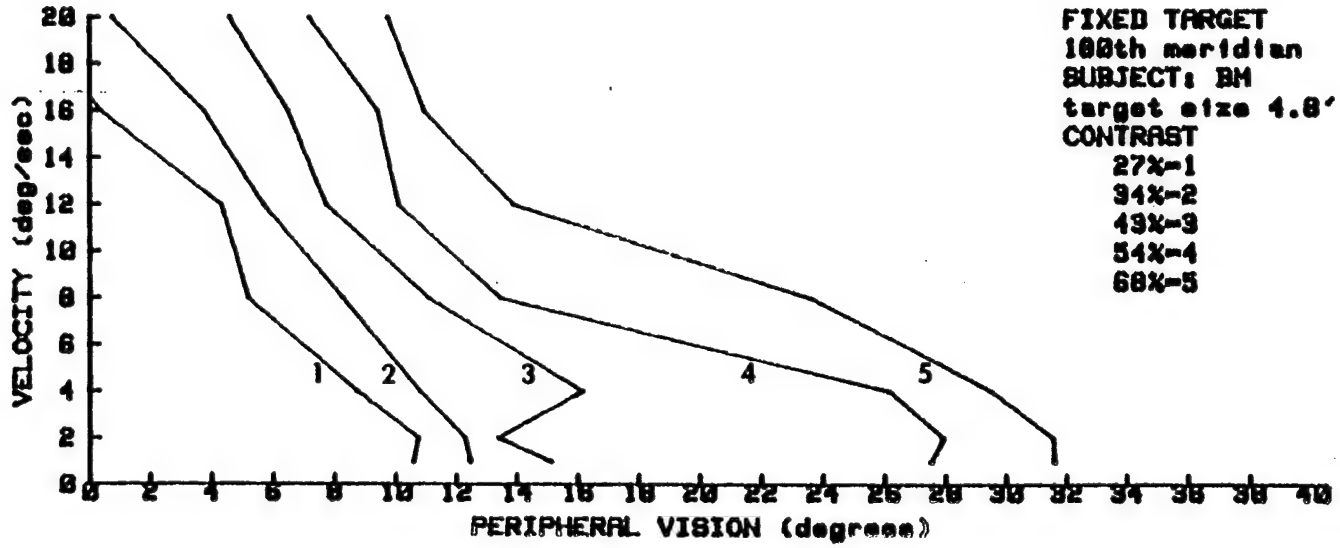
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	27.42	28.67	26.33	14.84	12.51	9.52	6.85
	S.D.	.925	1.278	2.607	1.775	.878	.558	.702
Contrast 54%	mean	20.08	23.83	13.67	12.01	8.68	6.67	4.35
	S.D.	4.657	2.912	.893	.617	.863	1.587	1.618
Contrast 43%	mean	12.58	13.00	11.33	7.01	7.18	3.85	2.02
	S.D.	.657	.660	1.293	1.063	.465	1.205	.480
Contrast 34%	mean	12.58	12.17	10.83	6.01	5.18	3.35	.85
	S.D.	.278	.383	.932	1.213	1.387	1.437	.778
Contrast 27%	mean	10.58	9.67	8.33	7.01	2.51	.35	-2.02
	S.D.	.692	.657	1.090	1.522	.682	1.297	.703
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: BM Procedure #2

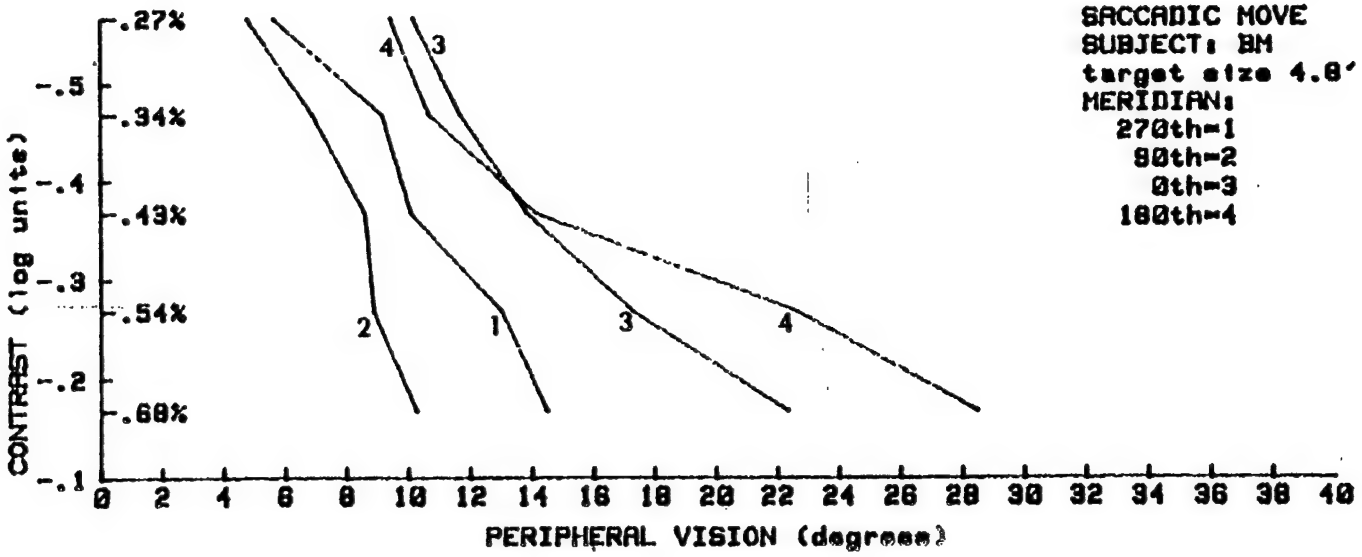
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	31.60	31.57	29.53	23.64	13.91	10.95	9.75
	S.D.	1.097	2.287	2.047	4.248	2.997	.962	1.657
Contrast 54%	mean	27.52	27.93	26.17	13.48	10.11	9.42	7.19
	S.D.	2.765	.535	1.997	1.145	.642	.822	1.582
Contrast 43%	mean	15.12	13.37	16.17	11.11	7.74	6.49	4.59
	S.D.	.877	.777	2.743	2.615	1.165	.432	1.963
Contrast 34%	mean	12.48	12.30	10.80	8.28	5.71	3.77	.75
	S.D.	.092	.670	.593	1.460	1.923	.845	1.233
Contrast 27%	mean	10.58	10.75	8.73	5.21	4.34	.39	-2.28
	S.D.	1.000	.545	.887	1.460	1.933	.870	.968
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

Subject: BM Procedure: #3

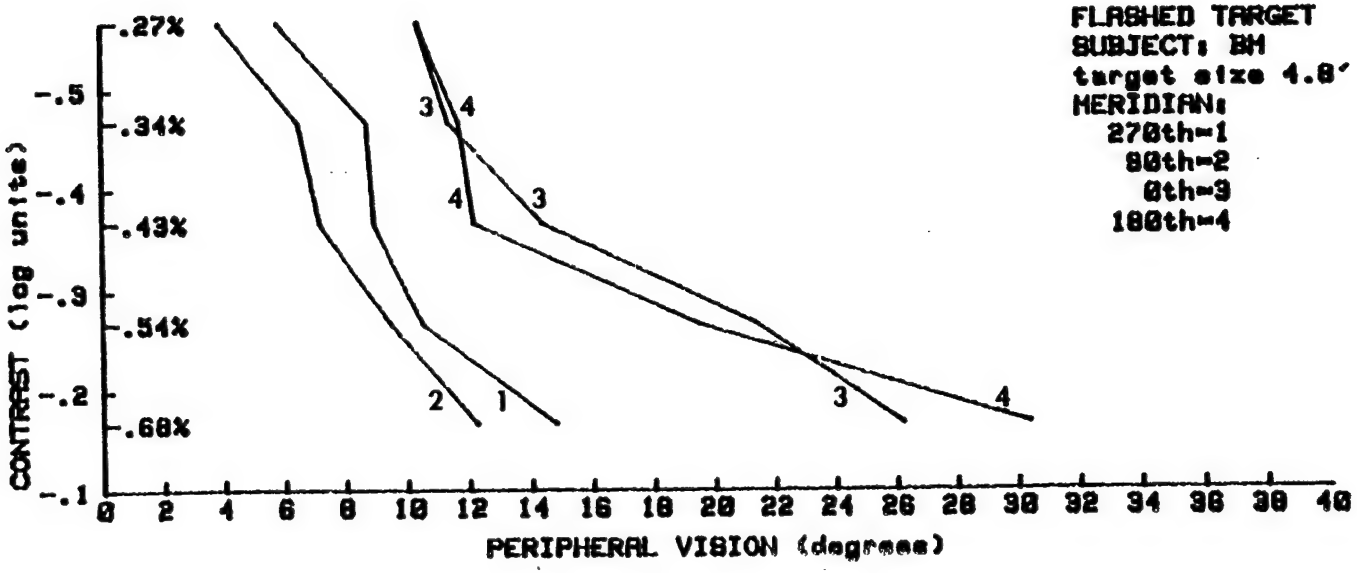
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	14.49	13.03	10.10	9.16	5.64
	S.D.	.094	1.049	1.047	.570	.151
90th Meridian	mean	10.27	8.89	8.61	6.91	4.79
	S.D.	.227	.371	.211	.567	.413
0th Meridian	mean	22.33	17.30	13.83	11.68	10.15
	S.D.	.342	1.737	.727	.815	.587
180th Meridian	mean	28.47	22.65	14.13	10.67	9.42
	S.D.	1.695	.983	1.768	1.245	.583
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

Subject: BM Procedure: #4

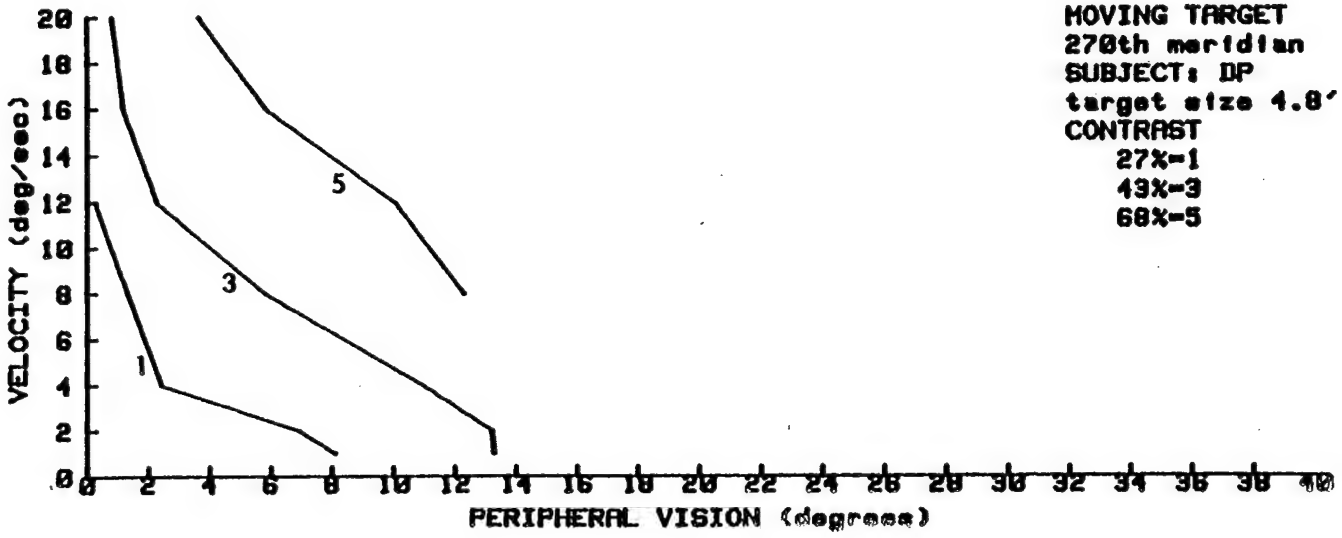
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	14.80	10.53	8.96	8.75	5.84
	S.D.	.667	1.328	.539	.315	.432
90th Meridian	mean	12.27	9.51	7.20	6.52	3.89
	S.D.	.040	.792	.584	.117	.616
0th Meridian	mean	26.23	21.40	14.38	11.38	10.38
	S.D.	2.602	4.030	.215	.597	1.167
180th Meridian	mean	30.37	19.47	12.18	11.72	10.42
	S.D.	1.973	4.447	.438	.472	1.077
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: DP Procedure #1

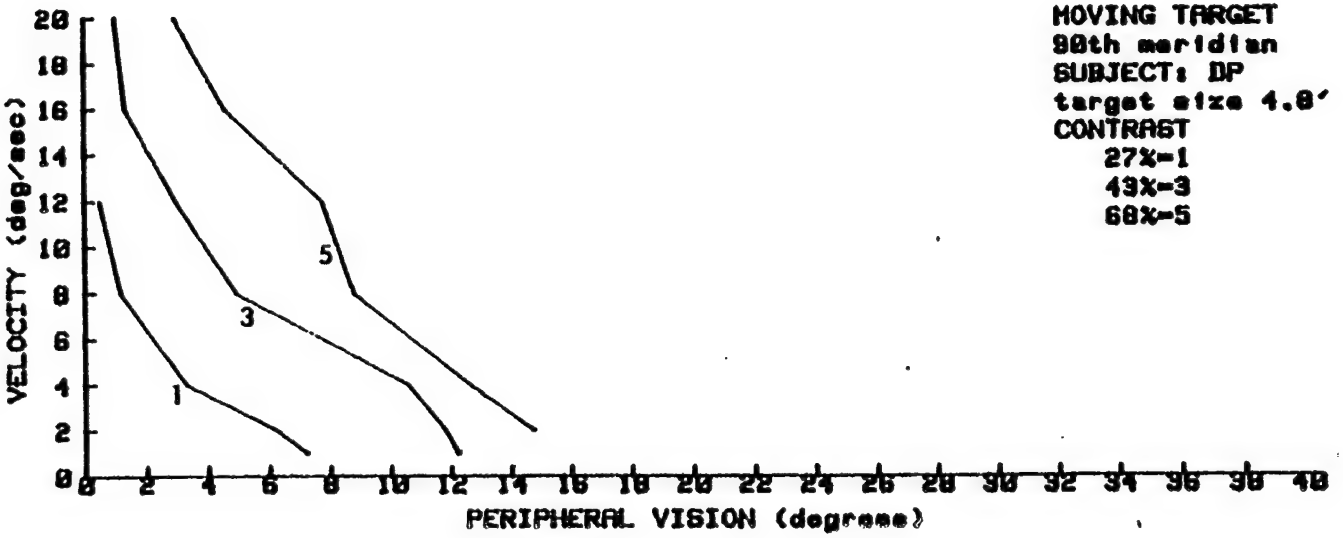
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				12.33	10.10	5.86	3.65
	S.D.				.778	.844	.453	.589
Contrast 43%	mean	13.28	13.22	10.96	5.85	2.28	1.17	.81
	S.D.	.260	.412	.425	.227	.369	.201	.452
Contrast 27%	mean	8.10	6.93	2.42	1.33	.25		
	S.D.	.402	.402	.344	.216	.230		
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: DP Procedure #1

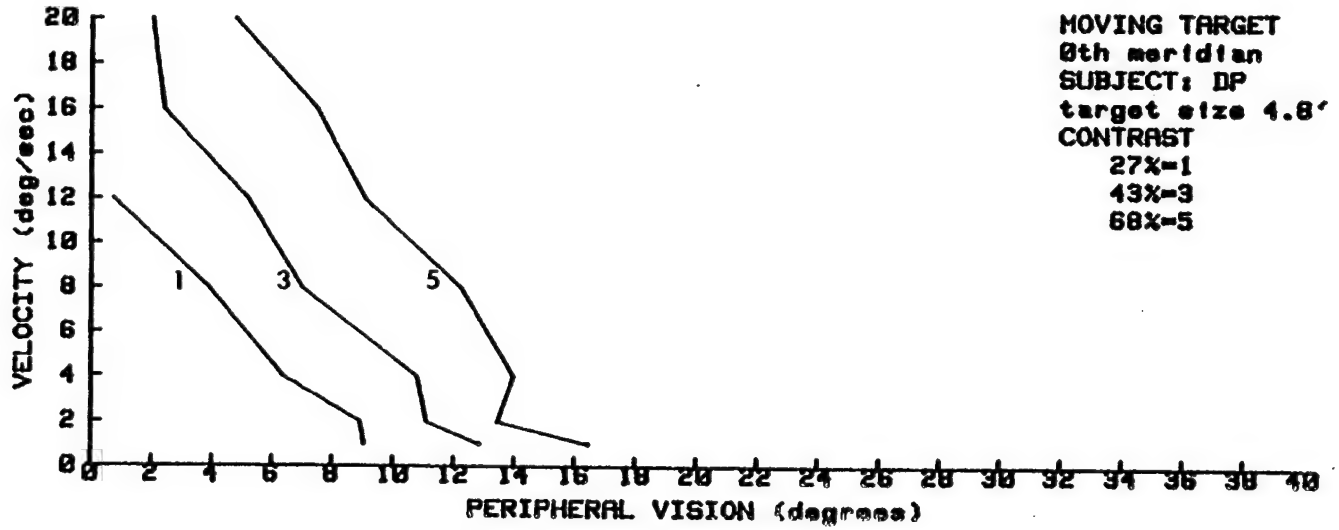
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean		14.73	12.62	8.79	7.78	4.59	2.95
	S.D.		.398	.183	.678	.312	.293	.167
Contrast 43%	mean	12.23	11.80	10.56	4.95	2.99	1.33	1.00
	S.D.	.444	.444	.273	.225	.306	.207	.453
Contrast 27%	mean	7.22	6.22	3.32	1.16	.49		
	S.D.	.310	.668	.244	.222	.273		
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: DP Procedure #1

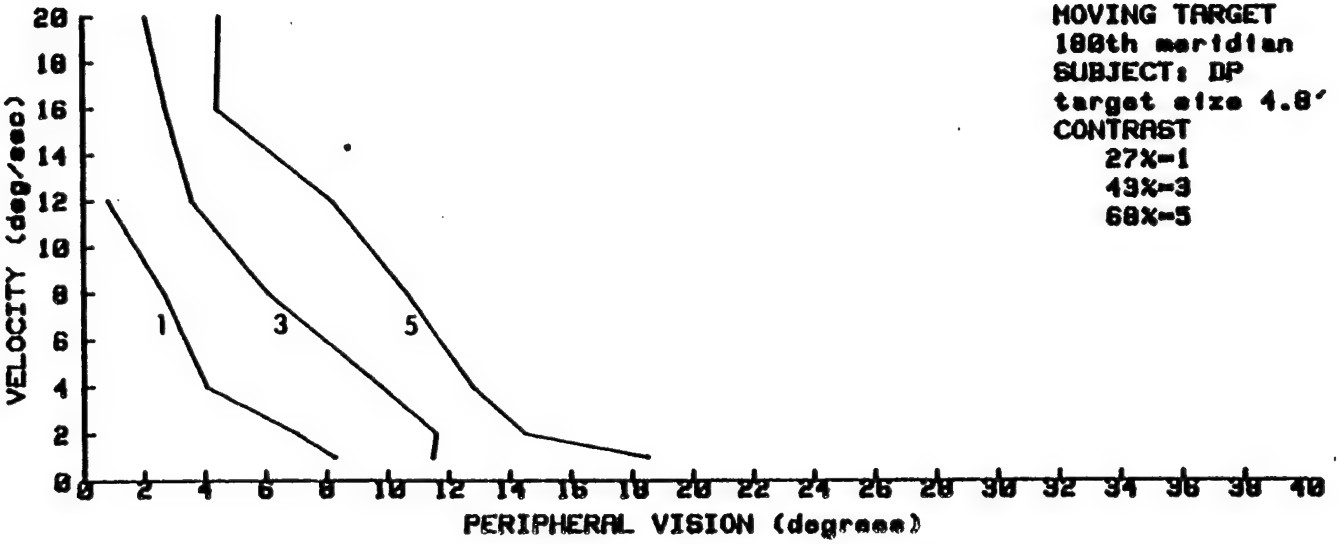
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	16.45	13.44	13.97	12.25	9.09	7.49	4.77
	S.D.	.927	1.088	.883	.770	1.795	1.935	.442
Contrast 43%	mean	12.84	11.12	10.79	7.00	5.20	2.39	2.00
	S.D.	1.033	1.627	.430	.512	.850	1.150	1.290
Contrast 27%	mean	9.06	8.92	6.36	3.88	.74		
	S.D.	.878	1.063	.837	1.225	.565		
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: DP Procedure #1

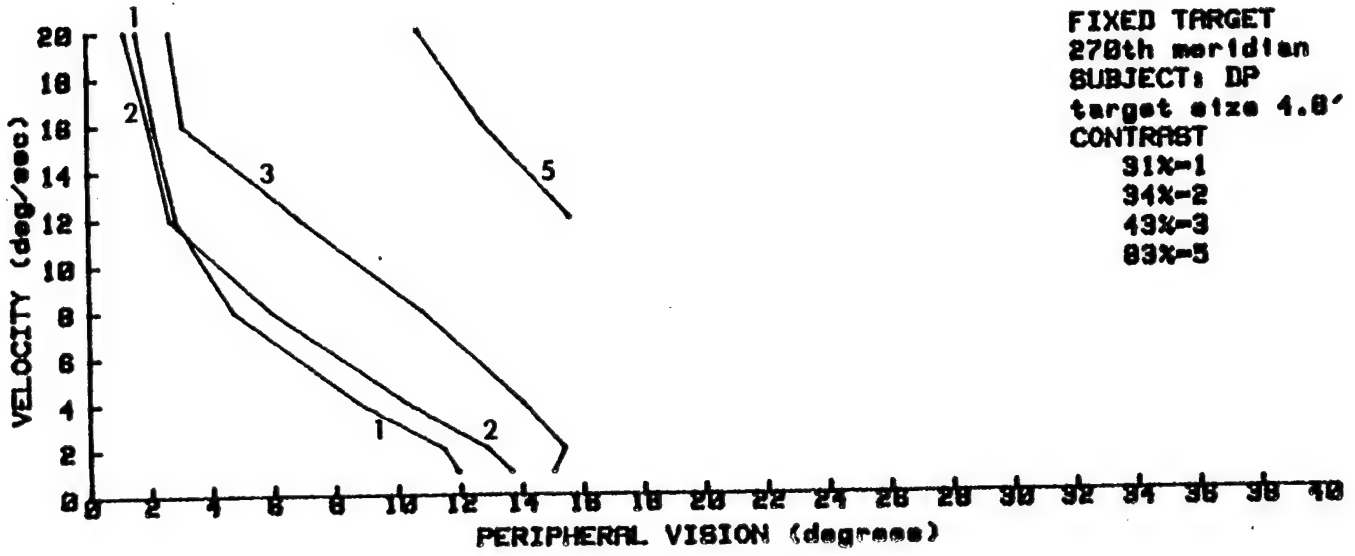
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	18.49	14.50	12.77	10.65	8.22	4.43	4.53
	S.D.	2.867	1.582	.567	1.812	1.590	1.415	.837
Contrast 43%	mean	11.47	11.60	9.79	6.11	3.60	2.73	2.07
	S.D.	.965	.407	1.33	1.04	1.03	.575	1.838
Contrast 27%	mean	8.26	7.04	4.07	2.68	.82		
	S.D.	.968	1.190	.600	.877	1.815		
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: DP Procedure #2

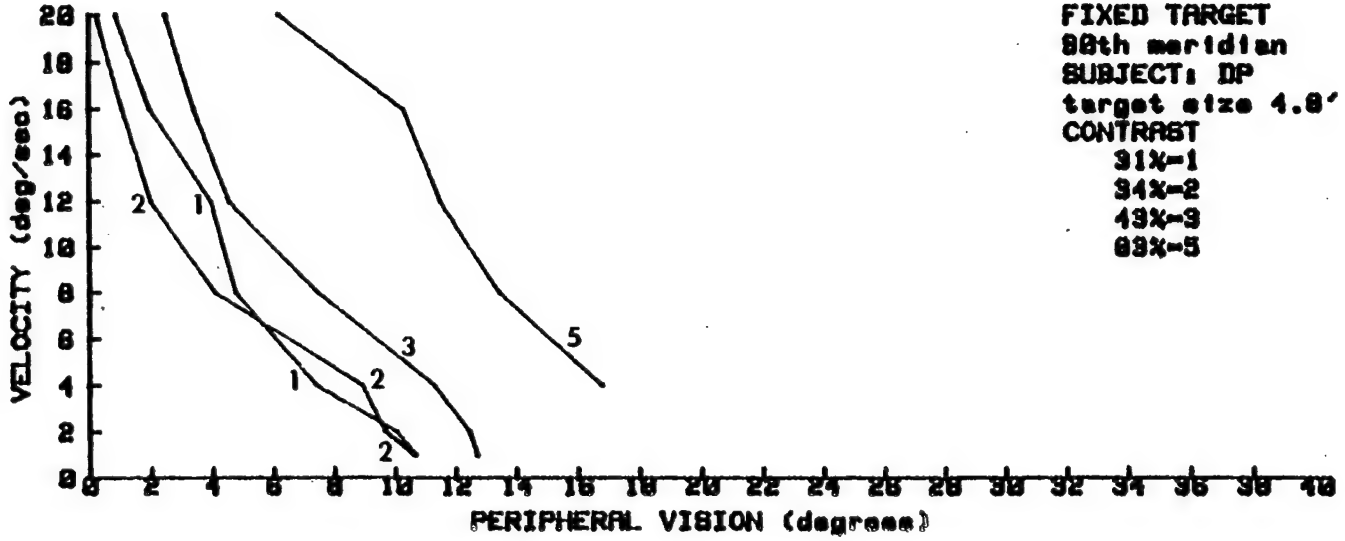
	Velocity	1	2	4	8	12	16	20
Contrast 83%	mean					15.61	12.81	10.76
	S.D.					.209	.267	.337
Contrast	mean							
	S.D.							
Contrast 43%	mean	15.03	15.39	14.03	10.80	6.88	3.11	2.69
	S.D.	.188	.433	.576	.420	.560	.435	.296
Contrast 34%	mean	13.65	12.89	10.29	5.95	2.67	2.00	1.21
	S.D.	.445	.205	.484	.649	.543	.224	.485
Contrast 31%	mean	11.93	11.47	8.75	4.72	2.87	2.17	1.60
	S.D.	.359	.488	.465	.608	.493	.713	.369
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: DP Procedure #2

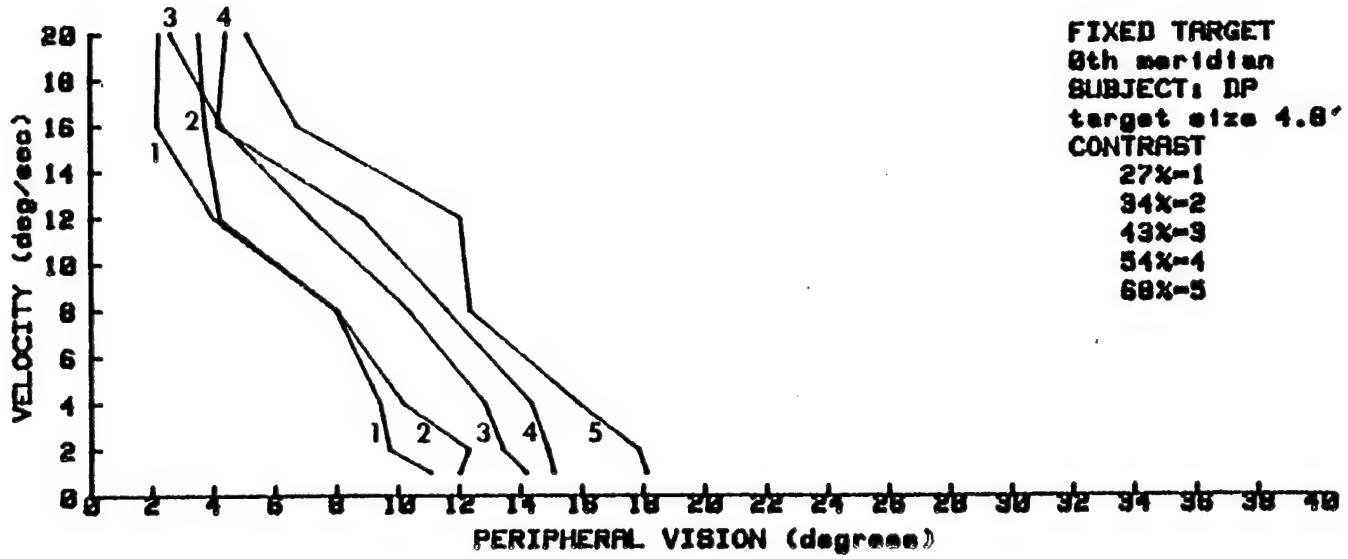
	Velocity	1	2	4	8	12	16	20
Contrast 83%	mean			16.77	13.44	11.52	10.29	6.19
	S.D.			.247	.591	.943	.481	.519
Contrast	mean							
	S.D.							
Contrast 43%	mean	12.71	12.47	11.29	7.47	4.55	3.40	2.47
	S.D.	.331	.324	.445	.777	.401	.307	.465
Contrast 34%	mean	10.63	9.68	8.92	4.09	2.00	1.07	.23
	S.D.	.257	.260	.320	.196	.357	.167	.204
Contrast 31%	mean	10.67	10.07	7.40	4.77	3.96	1.97	.85
	S.D.	.623	.277	.787	.181	.220	.517	.364
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: DP Procedure #2

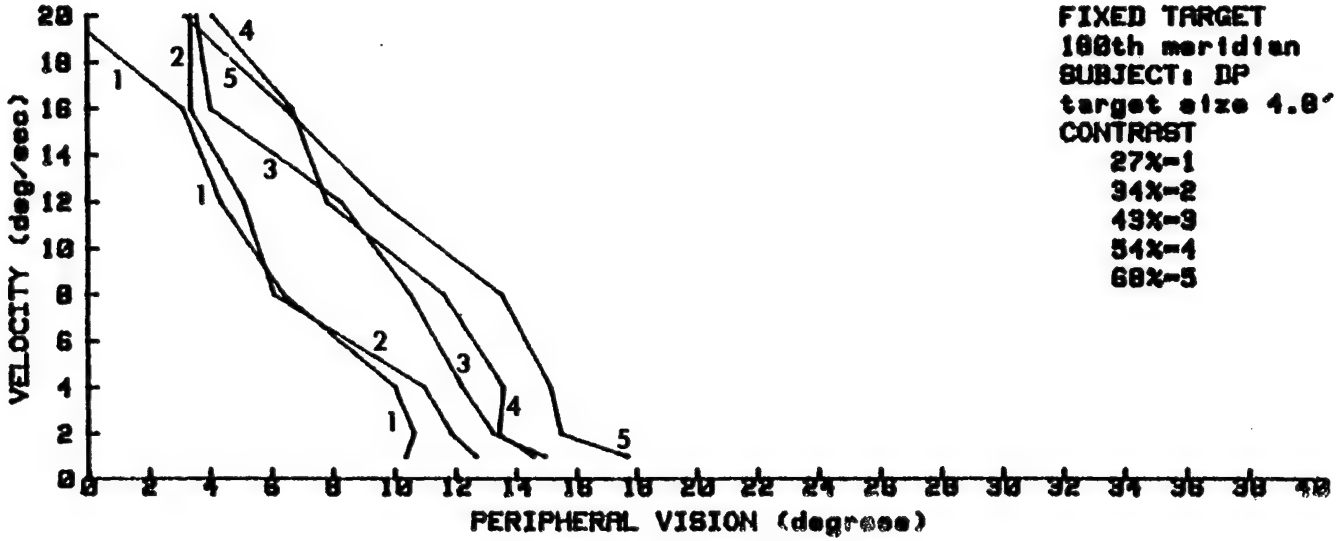
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	18.12	17.85	15.89	12.35	12.05	6.73	5.08
	S.D.	.8033	1.298	.457	.513	1.590	.420	1.372
Contrast 54%	mean	15.09	14.89	14.37	11.60	8.84	4.14	4.40
	S.D.	.767	.873	.712	1.117	1.113	.702	.300
Contrast 43%	mean	14.17	13.44	12.84	10.35	7.19	4.29	2.60
	S.D.	.748	.318	1.018	1.323	1.663	.857	.998
Contrast 34%	mean	12.02	12.32	10.17	8.03	4.22	3.73	3.53
	S.D.	.635	1.005	.658	1.352	1.852	.293	1.138
Contrast 27%	mean	11.07	9.72	9.42	7.98	4.02	2.16	2.23
	S.D.	.303	.747	.532	2.622	1.048	.578	2.143
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: DP Procedure #2

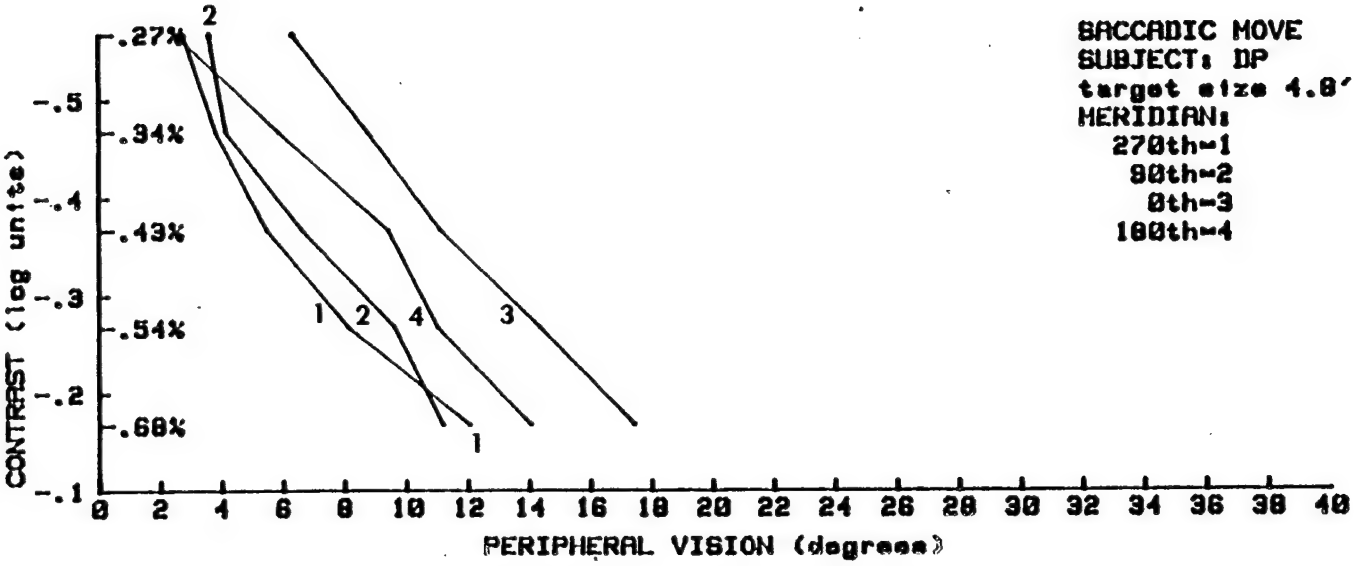
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	17.67	15.47	15.12	13.53	9.54	6.44	3.18
	S.D.	.505	.467	.772	.720	2.032	1.072	1.377
Contrast 54%	mean	14.56	13.42	13.57	11.63	7.81	6.68	4.09
	S.D.	.558	.998	.752	.795	2.795	2.398	1.028
Contrast 43%	mean	14.94	13.25	12.21	10.53	8.29	4.01	3.55
	S.D.	.597	1.318	.867	.917	1.253	1.528	1.068
Contrast 34%	mean	12.67	11.87	10.96	6.08	5.09	3.36	3.37
	S.D.	.280	1.172	.957	.982	1.83	2.215	2.423
Contrast 27%	mean	10.36	10.64	10.01	6.40	4.34	3.11	-.62
	S.D.	.653	.582	1.430	1.508	.947	1.312	2.378
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

Subject: DP Procedure: #3

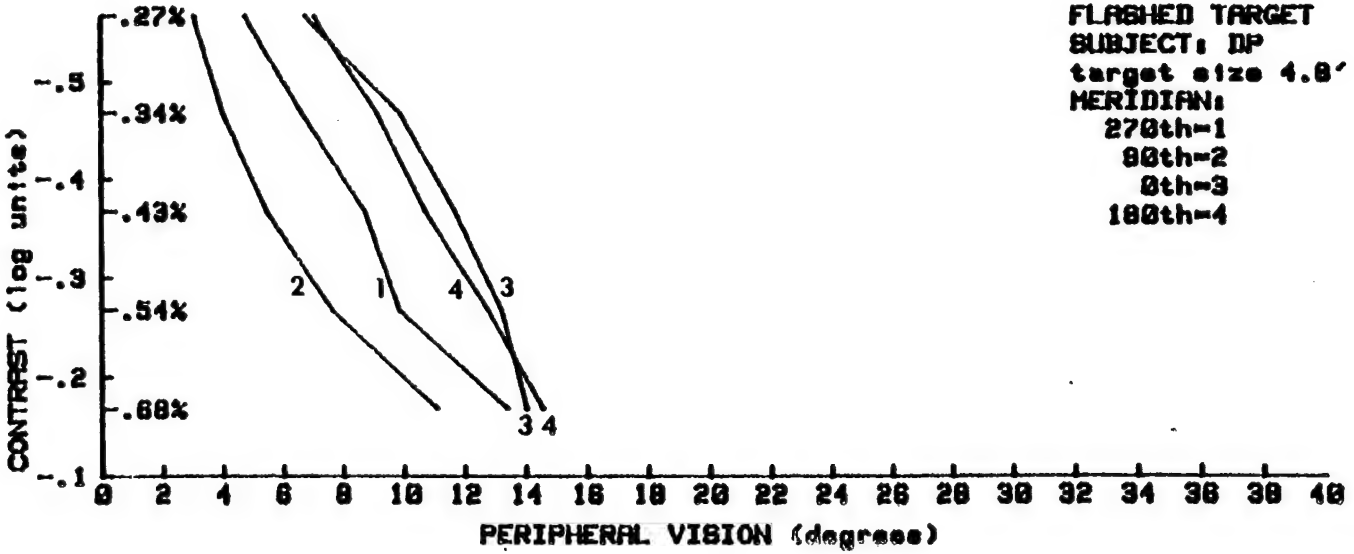
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	12.07	8.13	5.50	3.83	2.77
	S.D.	.150	.434	.651	.373	.207
90th Meridian	mean	11.20	9.63	6.64	4.16	3.60
	S.D.	.633	.244	.476	.256	.454
0th Meridian	mean	17.43	14.35	11.13	8.77	6.32
	S.D.	.383	.488	.660	.600	.368
180th Meridian	mean	14.05	11.03	9.43	5.87	2.55
	S.D.	.745	.128	1.708	.605	.415
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

Subject: DP Procedure: #4

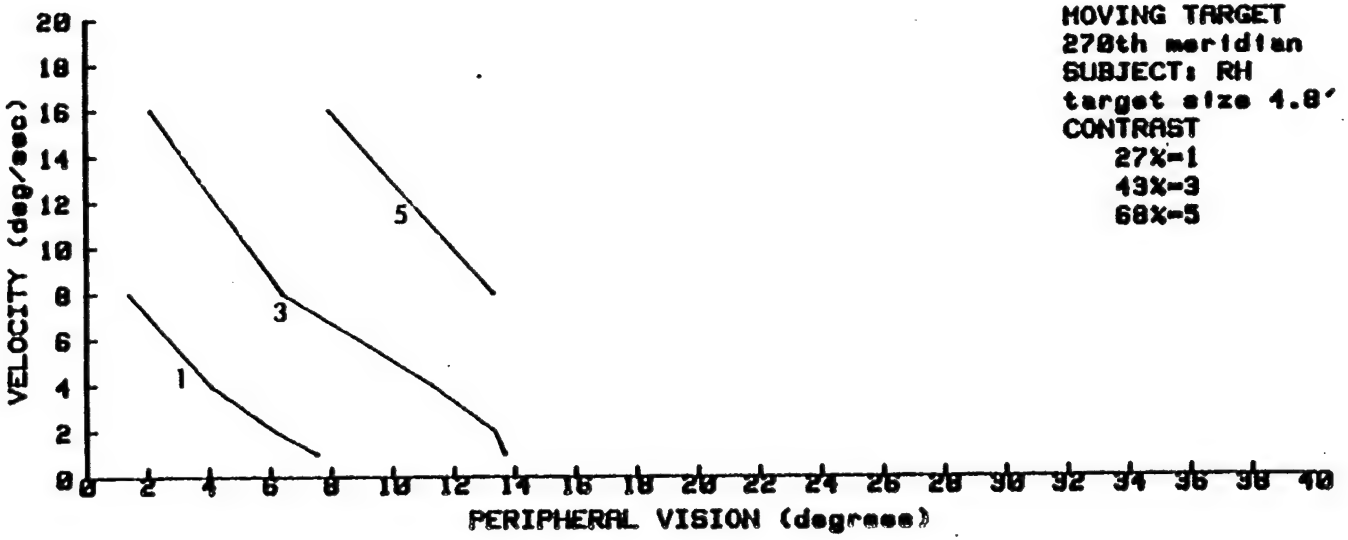
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	13.40	9.86	8.74	6.66	4.77
	S.D.	.314	.440	.349	.297	.690
90th Meridian	mean	11.09	7.64	5.47	4.01	3.06
	S.D.	.341	.427	.193	.181	.666
0th Meridian	mean	14.03	13.22	11.70	9.90	6.78
	S.D.	1.183	.522	.702	.243	.270
180th Meridian	mean	14.57	12.77	10.73	9.15	7.08
	S.D.	.407	.515	.562	.658	.690
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: RH Procedure #1

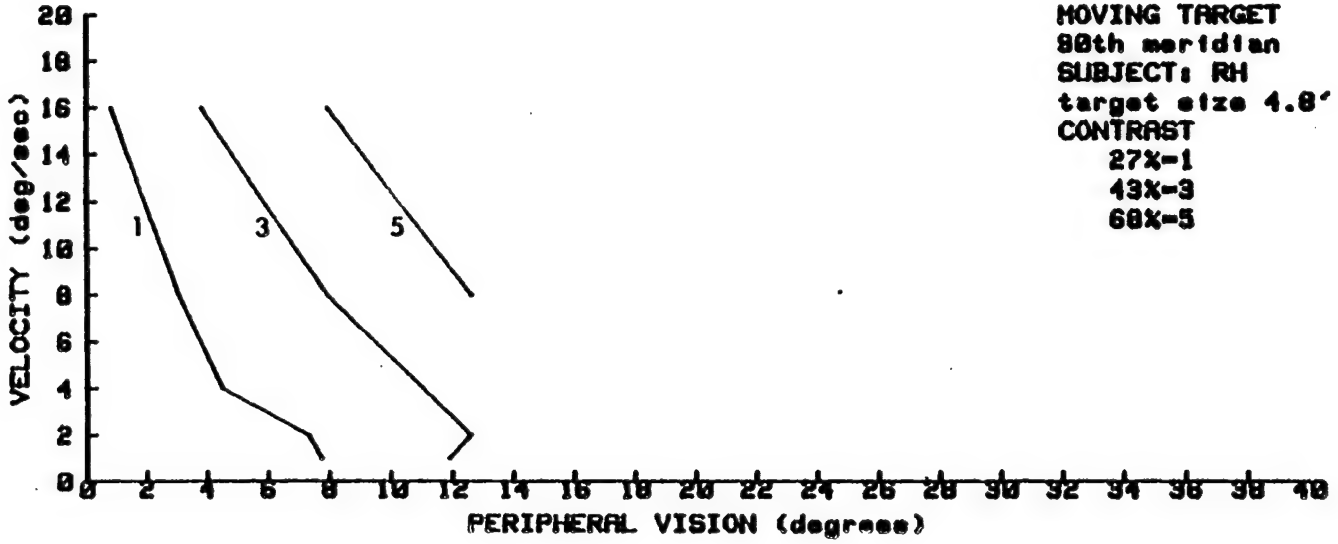
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				13.31		7.94	
	S.D.				.764		.369	
Contrast 43%	mean	13.67	13.33	11.26	6.41		2.11	
	S.D.	.633	.843	.653	1.016		.402	
Contrast 27%	mean	7.52	6.16	4.05	1.38			
	S.D.	.165	.380	.504	.506			
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: RH Procedure #1

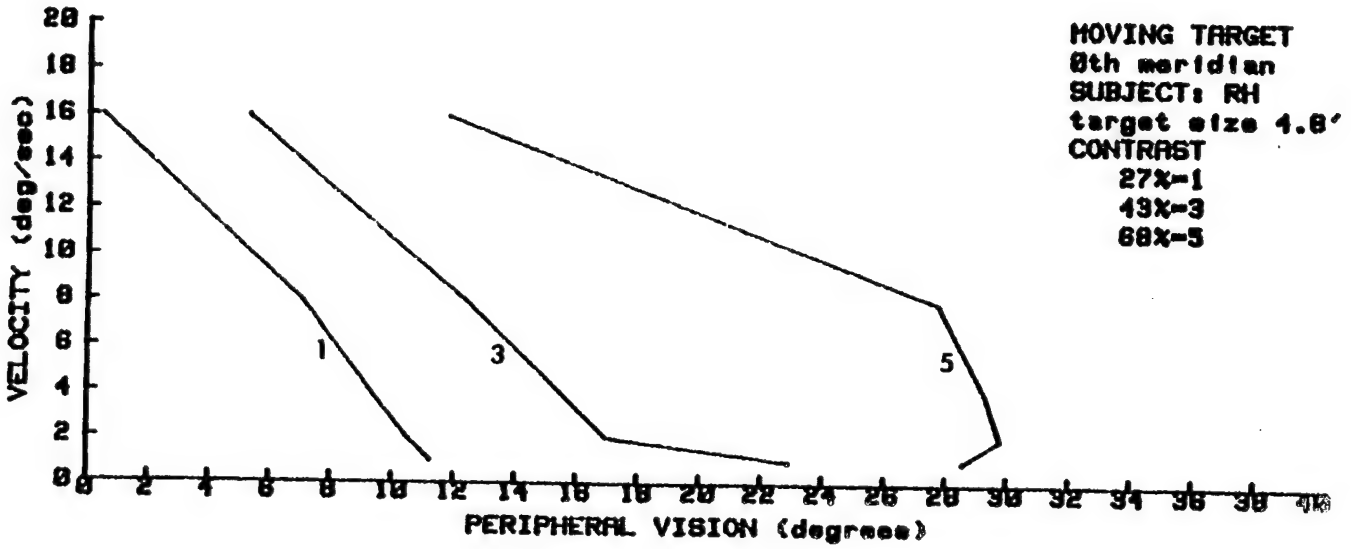
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				12.63		7.96	
	S.D.				1.031		.553	
Contrast 43%	mean	11.89	12.59	11.04	7.94		3.83	
	S.D.	.674	.551	.601	.374		.179	
Contrast 27%	mean	7.74	7.31	4.49	3.06		.82	
	S.D.	.338	.585	.505	.440		.628	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: RH Procedure #1

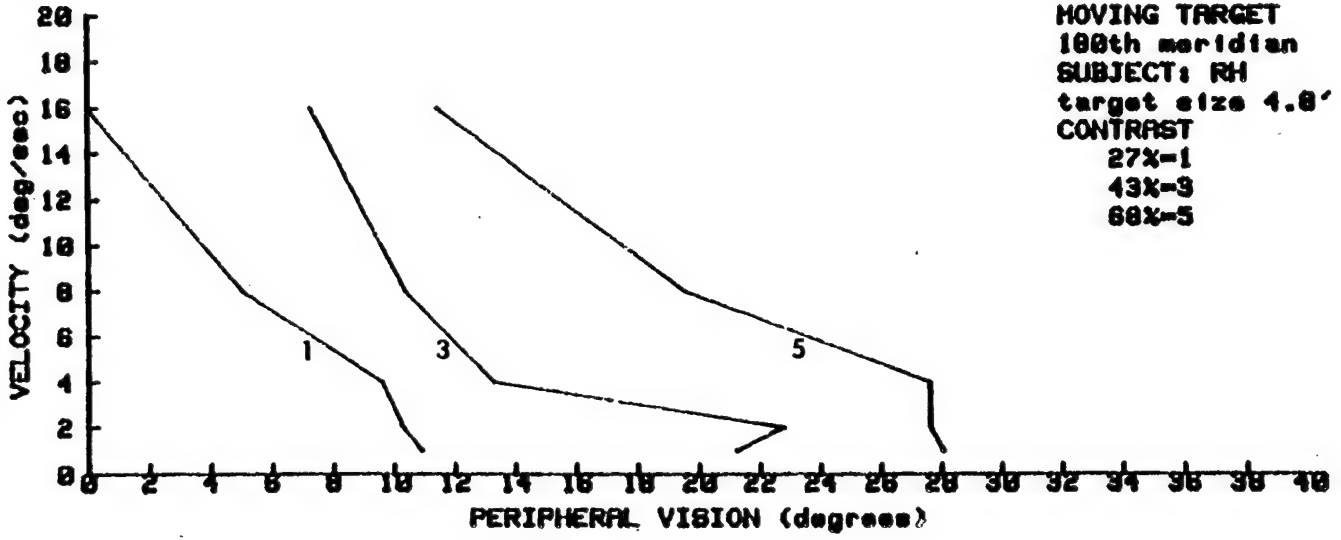
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	28.57	29.80	29.28	27.73		11.79	
	S.D.	.630	.982	.977	2.290		.947	
Contrast 43%	mean	22.74	16.97	15.45	12.40		5.29	
	S.D.	5.510	1.103	1.518	1.517		2.158	
Contrast 27%	mean	11.24	10.47	9.28	7.07		.46	
	S.D.	1.033	1.462	1.308	1.367		1.498	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: RH Procedure #1

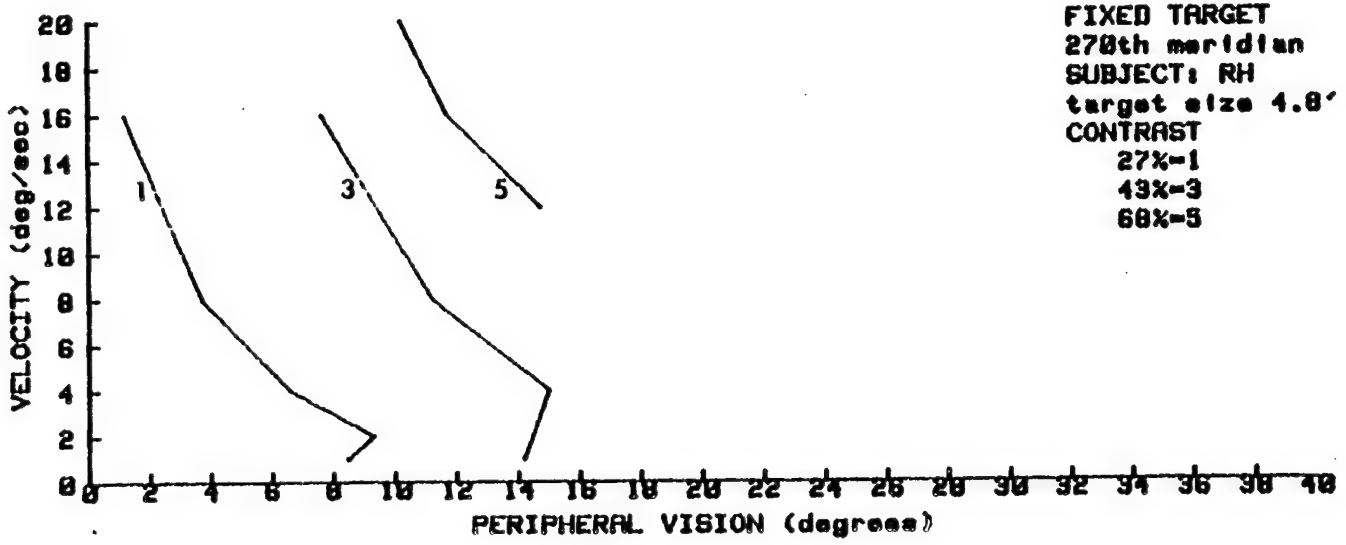
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	28.07	27.64	27.62	19.57		11.46	
	S.D.	1.533	1.282	2.142	4.125		1.963	
Contrast 43%	mean	21.24	22.80	13.28	10.40		7.29	
	S.D.	2.637	.947	1.682	.777		2.300	
Contrast 27%	mean	10.91	10.30	9.62	4.07		-.04	
	S.D.	1.023	.853	1.477	1.233		1.740	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: RH Procedure #2

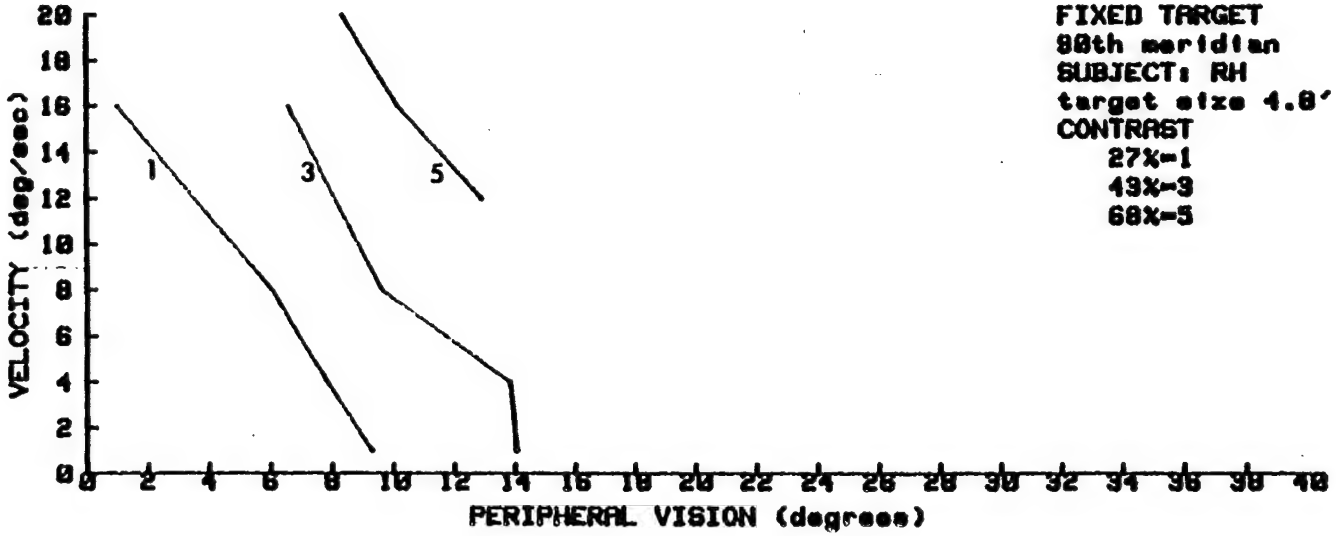
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean					14.75	11.75	10.23
	S.D.					1.151	.292	.720
Contrast 43%	mean	14.19		15.00	11.25		7.65	
	S.D.	1.273		.801	.772		.965	
Contrast 27%	mean	8.49	9.32	6.60	3.72		1.19	
	S.D.	.829	.832	.575	.367		.252	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: RH Procedure #2

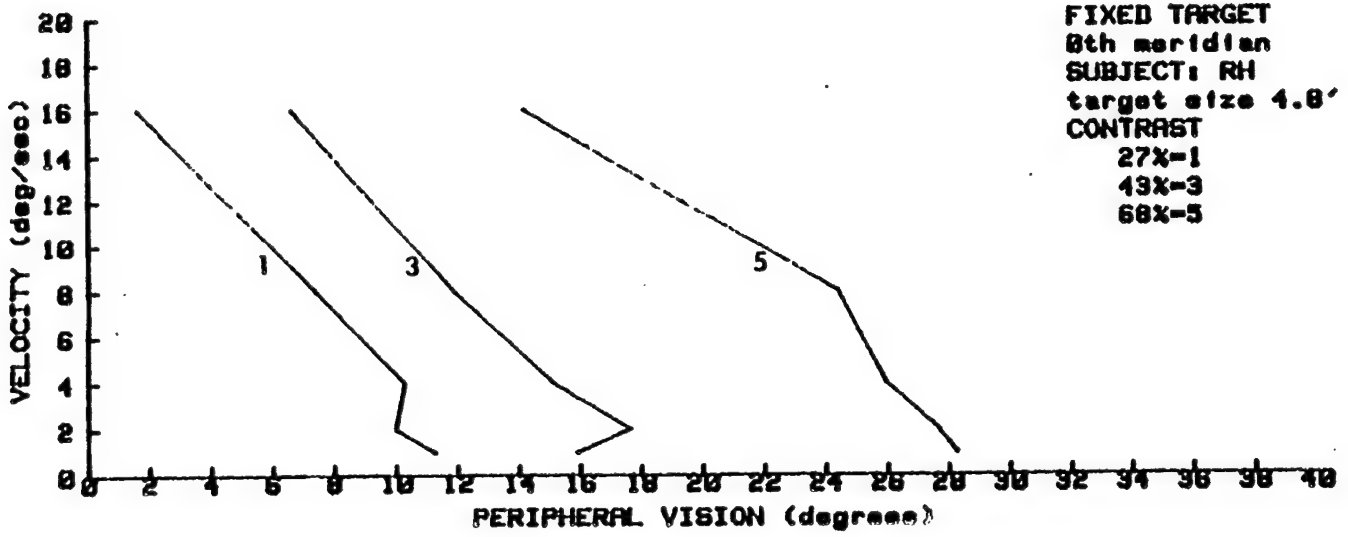
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean					12.91	10.16	8.35
	S.D.					.468	.464	.391
Contrast 43%	mean	14.05		13.84	9.63		6.59	
	S.D.	.653		.344	.669		.465	
Contrast 27%	mean	9.29		7.84	6.05		1.01	
	S.D.	.573		.771	.741		.312	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: RH Procedure #2

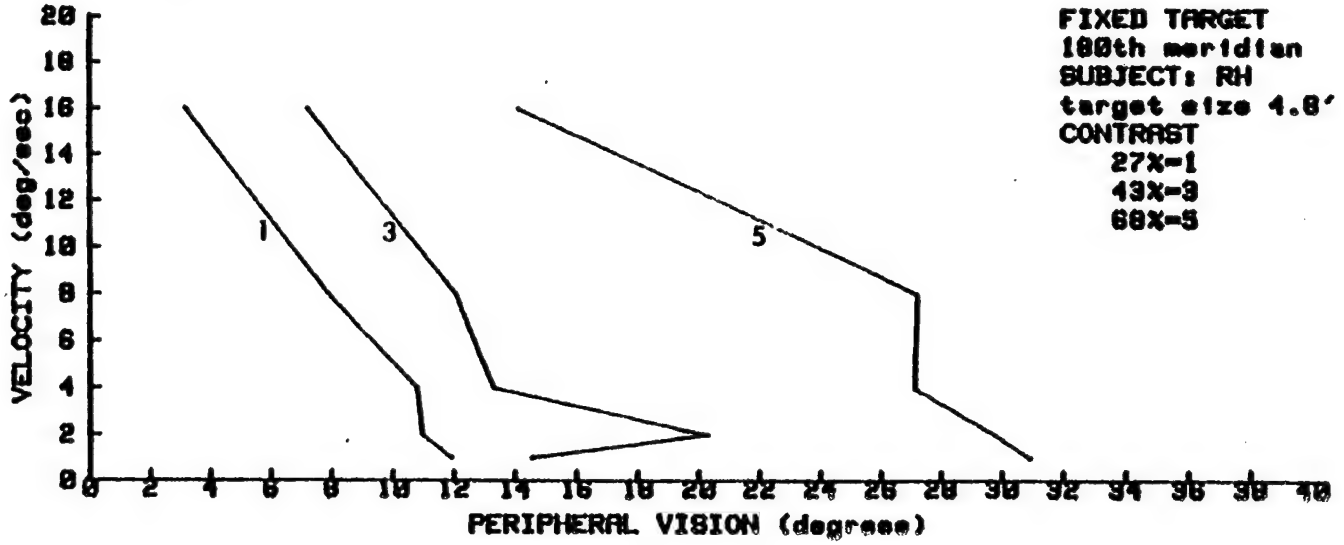
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	28.24	27.64	25.95	24.40		14.19	
	S.D.	1.440	2.253	1.417	1.538		1.917	
Contrast 43%	mean	15.91	17.64	15.12	11.90		6.62	
	S.D.	.965	3.068	.183	.923		.590	
Contrast 27%	mean	11.24	9.97	10.28	7.40		1.62	
	S.D.	1.697	1.895	.923	3.405		.740	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: RH Procedure #2

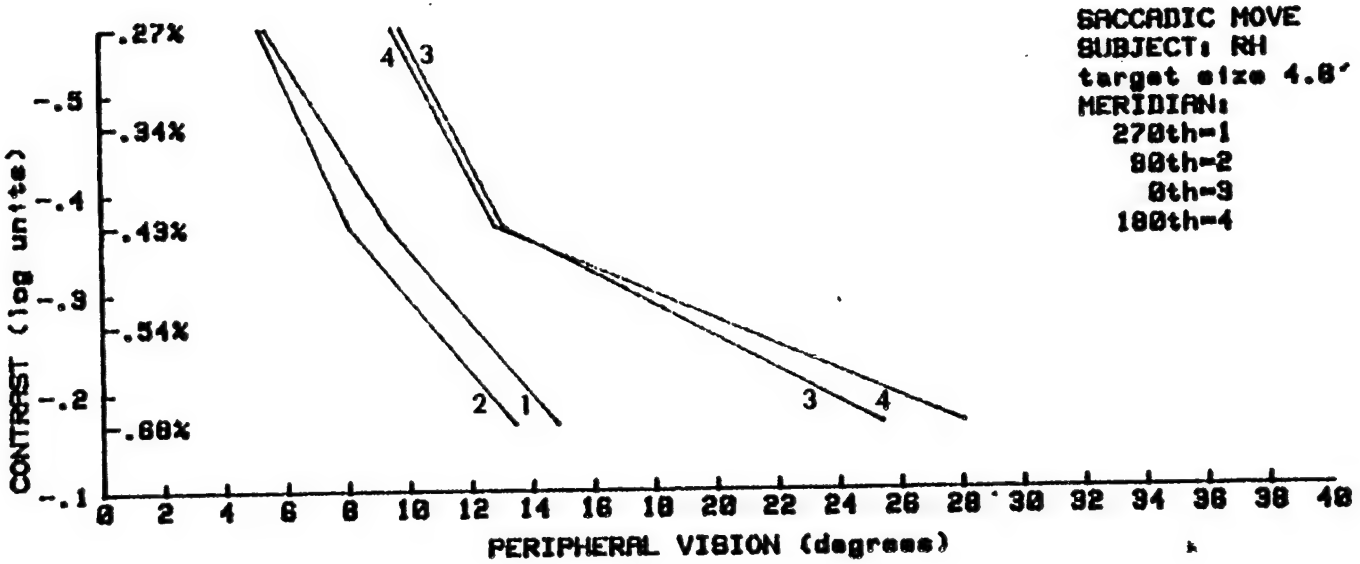
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	30.91	29.80	27.12	27.23		14.12	
	S.D.	1.427	1.095	2.398	.940		2.230	
Contrast 43%	mean	14.57	20.30	13.28	12.07		7.22	
	S.D.	2.133	2.500	1.453	1.953		1.140	
Contrast 27%	mean	11.91	10.97	10.78	7.90		3.16	
	S.D.	.480	.518	1.105	1.157		2.807	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

Subject: RH Procedure: #3

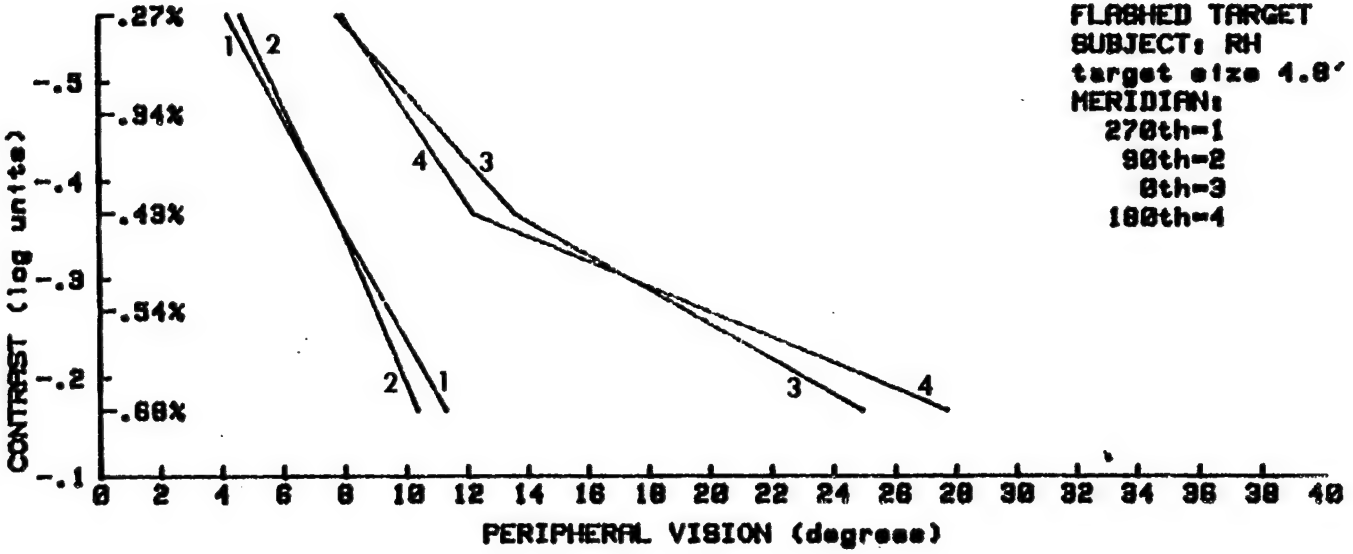
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	14.81		9.37		5.40
	S.D.	.383		.739		.456
90th Meridian	mean	13.43		8.07		5.20
	S.D.	.643		.301		.383
0th Meridian	mean	25.38		13.10		9.80
	S.D.	.902		.672		.443
180th Meridian	mean	28.03		12.82		9.52
	S.D.	1.105		.712		.520
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

Subject: RH Procedure: #4

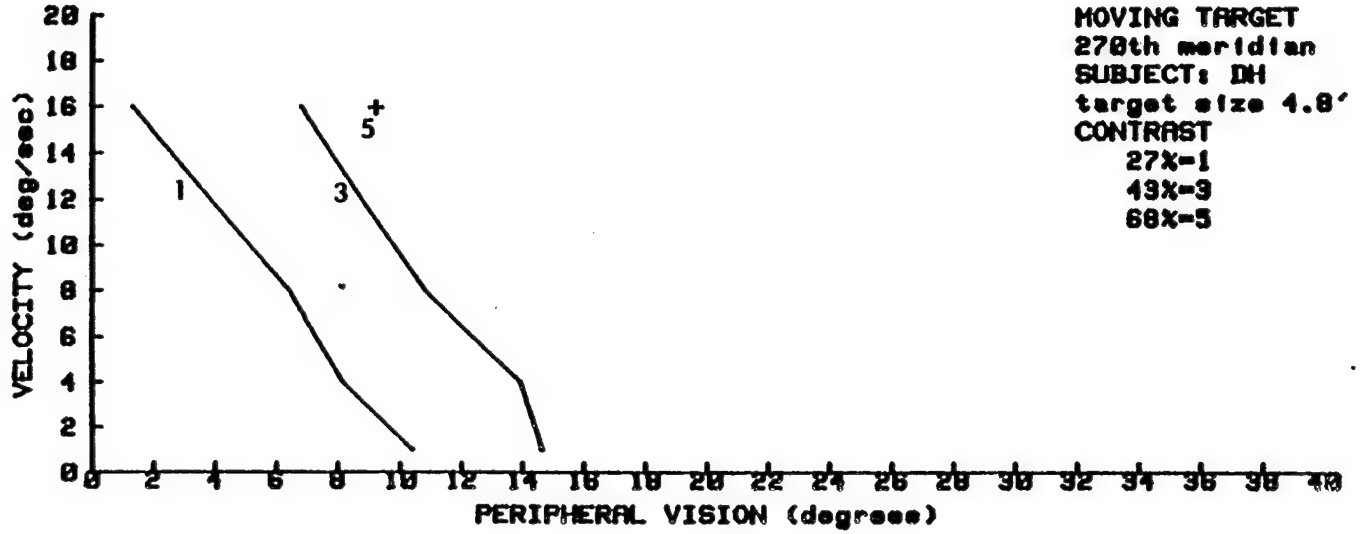
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	11.29		7.68		4.63
	S.D.	.528		.876		.459
90th Meridian	mean	10.37		7.71		4.20
	S.D.	1.031		.308		.313
0th Meridian	mean	24.92		13.60		7.78
	S.D.	.622		1.133		.590
180th Meridian	mean	27.68		12.22		7.95
	S.D.	1.080		.578		.972
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: DH Procedure #1

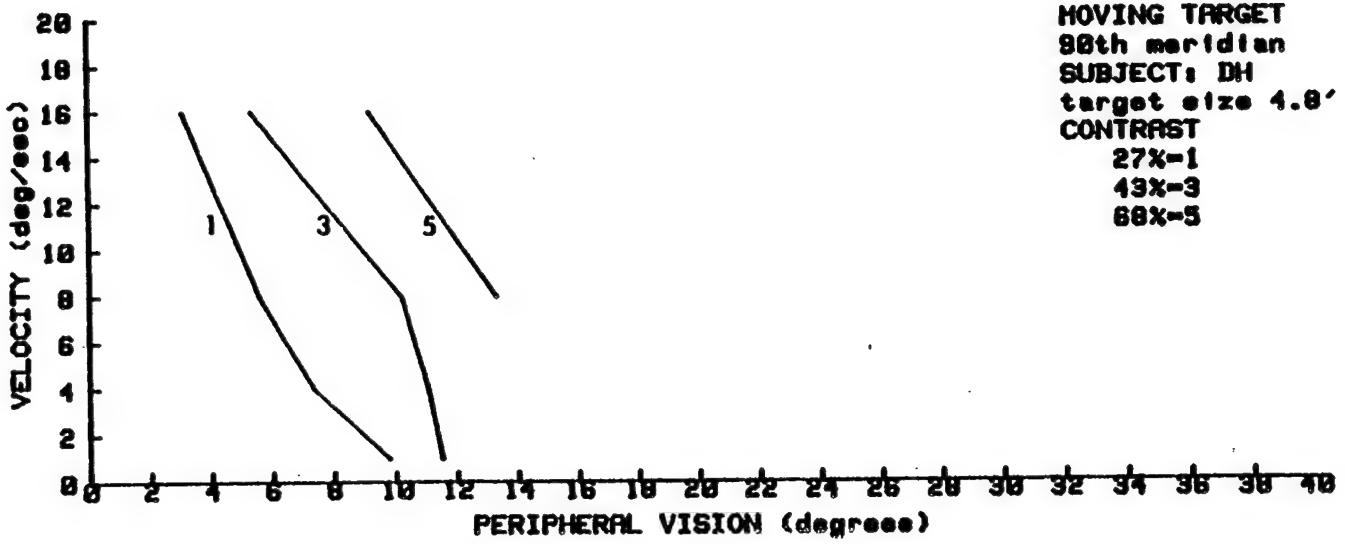
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean						12.23	
	S.D.						.883	
Contrast 43%	mean	14.63		13.90	10.80		6.78	
	S.D.	.590		.623	.426		.596	
Contrast 27%	mean	10.38		8.14	6.40		1.31	
	S.D.	.396		.532	.681		.216	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: DH Procedure #1

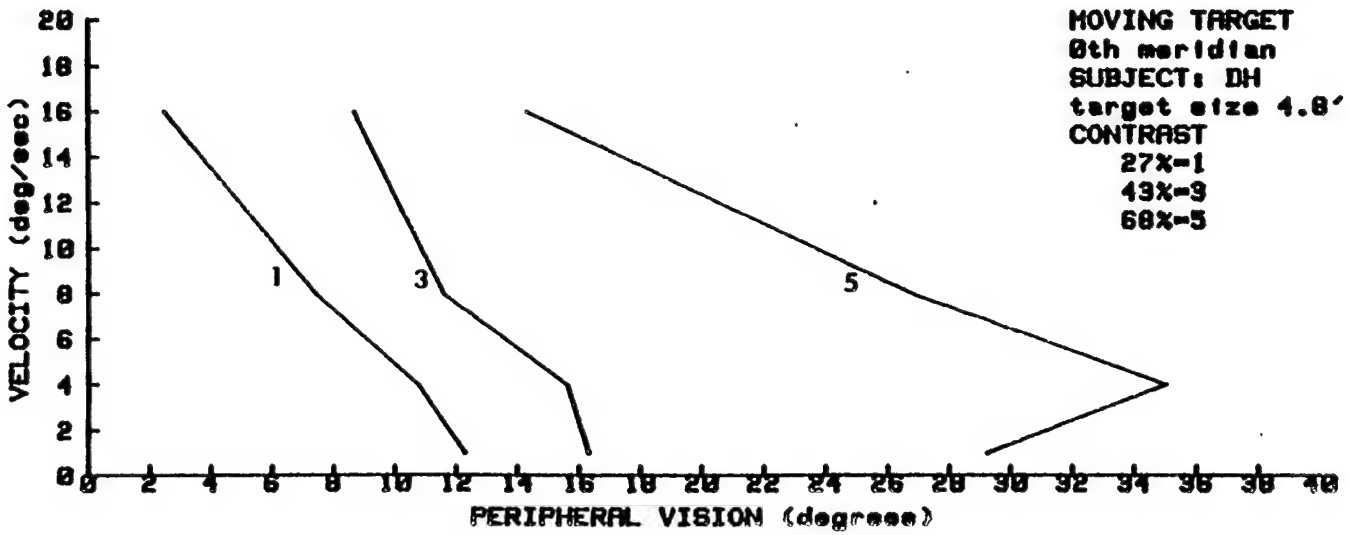
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				13.32		9.22	
	S.D.				.598		.848	
Contrast 43%	mean	11.51		11.06	10.23		5.37	
	S.D.	.622		.459	.585		.690	
Contrast 27%	mean	9.79		7.36	5.59		3.09	
	S.D.	.774		.885	.549		.585	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: DH Procedure #1

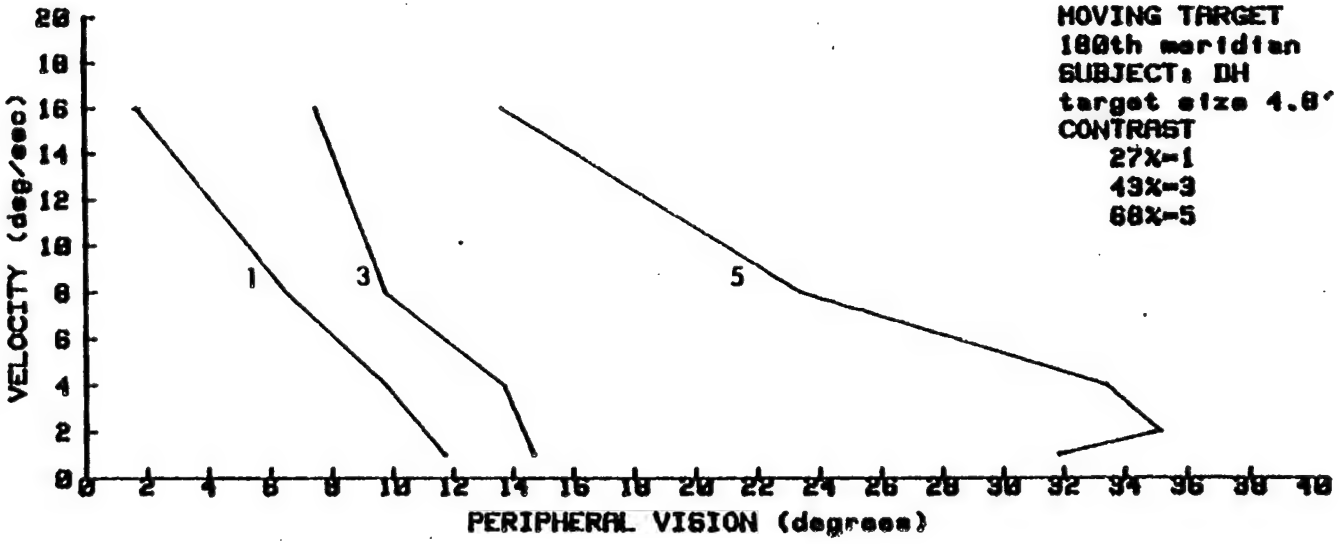
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	29.25		35.03	26.86		14.31	
	S.D.	4.985		2.662	2.342		1.442	
Contrast 43%	mean	16.32		15.60	11.62		8.68	
	S.D.	1.397		.570	1.013		.630	
Contrast 27%	mean	12.29		10.77	7.46		2.48	
	S.D.	.585		1.483	1.550		.345	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: DH Procedure #1

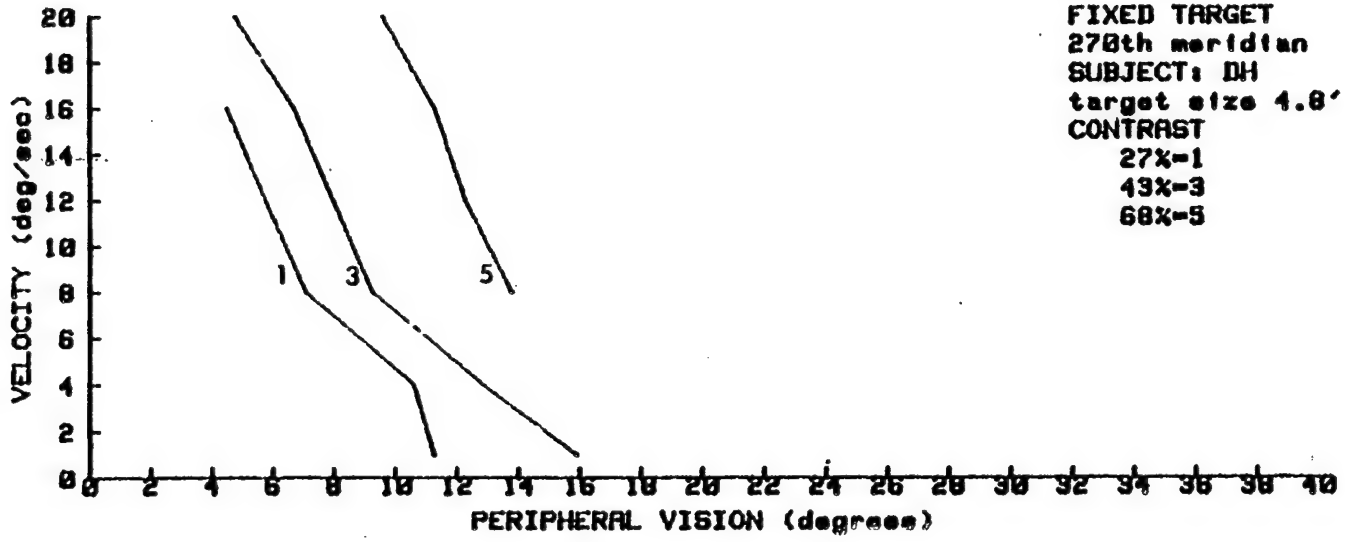
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	31.85	35.15	33.40	23.39		13.65	
	S.D.	1.741	.900	2.520	3.150		.402	
Contrast 43%	mean	14.69		13.70	9.77		7.48	
	S.D.	.638		.777	1.767		1.023	
Contrast 27%	mean	11.72		9.77	6.49		1.68	
	S.D.	.773		.720	.712		1.128	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

270th Meridian Subject: DH Procedure #2

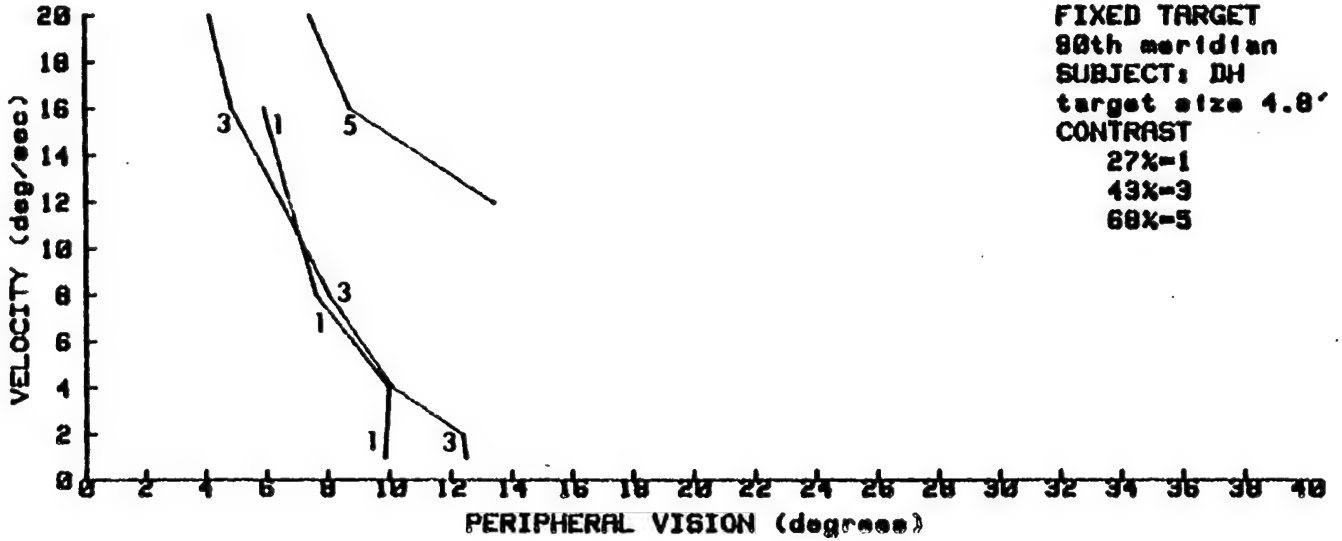
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean				13.80	12.30	11.30	9.59
	S.D.				.686	.641	.759	.559
Contrast 43%	mean	15.90		12.84	9.27	8.00	6.71	4.77
	S.D.	.657		.390	.646	.569	.689	.689
Contrast 27%	mean	11.27		10.60	7.09		4.49	
	S.D.	.360		.361	.620		1.069	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

90th Meridian Subject: DH Procedure #2

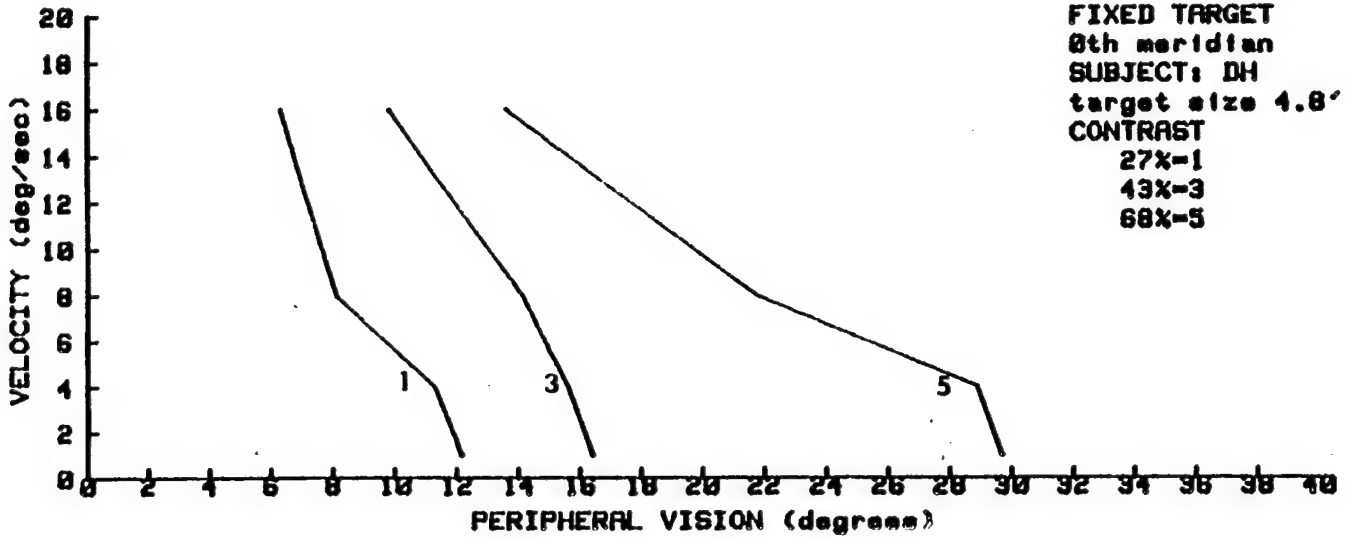
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean					13.43	8.76	7.44
	S.D.					.509	.306	.684
Contrast 43%	mean	12.50	12.39	10.13	8.06	6.51	4.87	4.14
	S.D.	1.187	1.057	1.057	.556	.543	.774	.267
Contrast 27%	mean	9.86		10.00	7.63		5.93	
	S.D.	.133		.300	.731		.536	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

0th Meridian Subject: DH Procedure #2

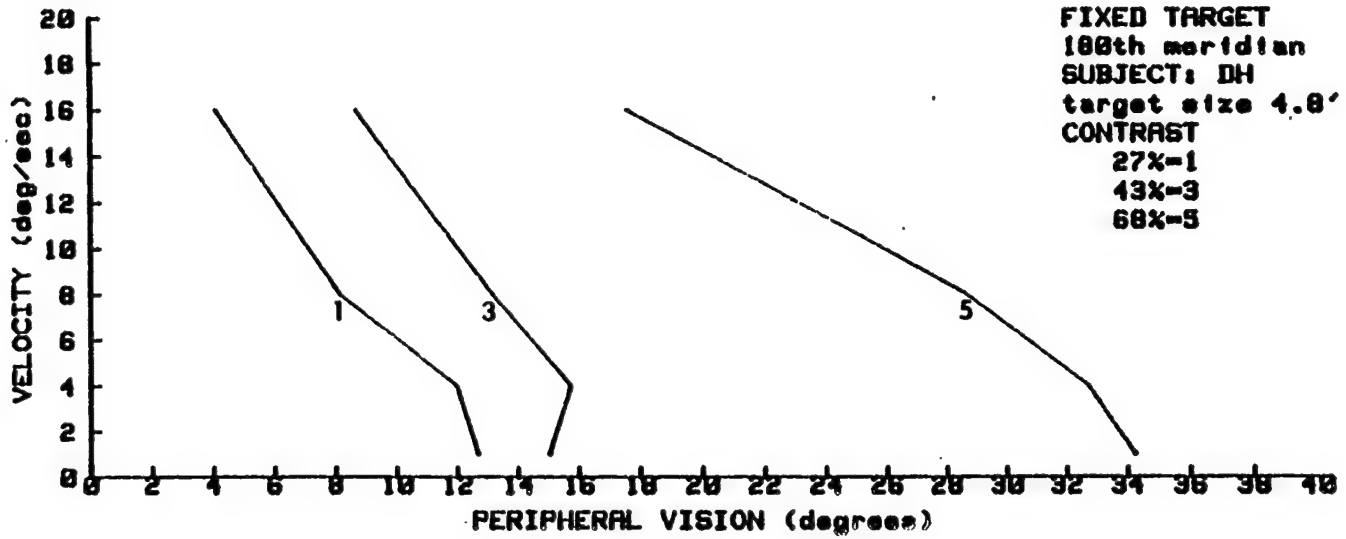
	Velocity	1	2	4	8	12	16	20
Contrast 68%	mean	29.69		28.90	21.77		13.61	
	S.D.	.720		1.348	3.072		2.240	
Contrast 43%	mean	16.42		15.62	14.14		9.81	
	S.D.	1.947		1.005	2.086		1.252	
Contrast 27%	mean	12.17		11.30	8.12		6.31	
	S.D.	.473		.500	.647		2.052	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

180th Meridian Subject: DH Procedure #2

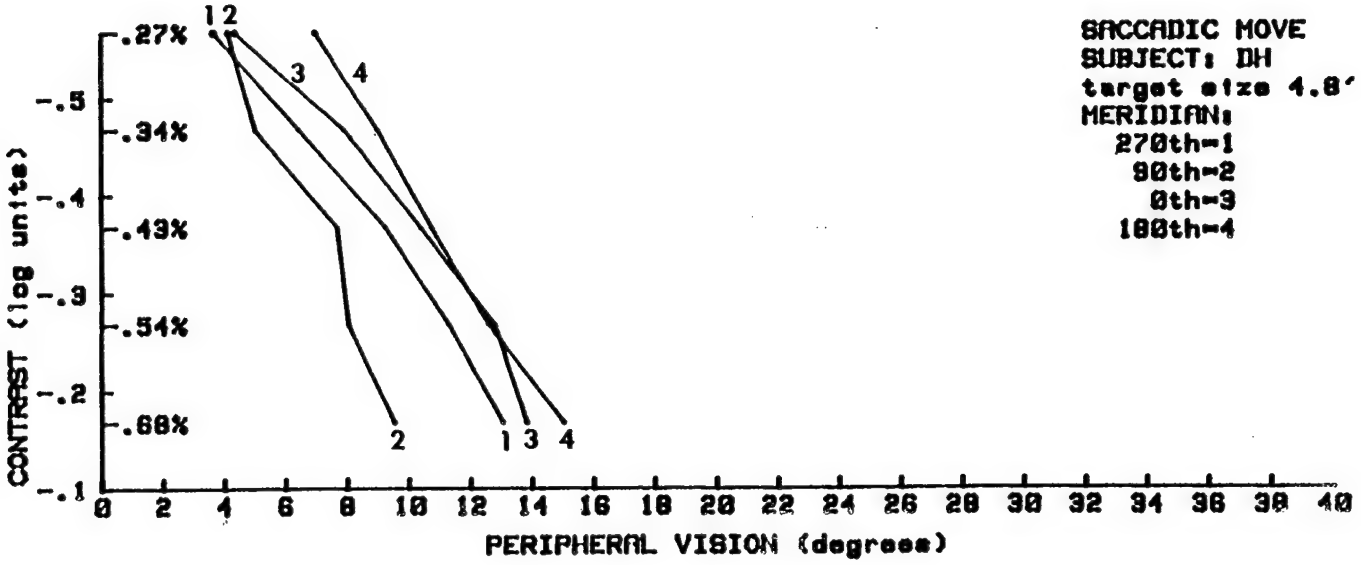
	Velocity	1	2	4	8	12	16	20
Contrast	mean	34.24		32.73	28.71		17.60	
68%	S.D.	1.422		3.410	2.302		2.477	
Contrast	mean	15.02		15.73	13.17		8.68	
43%	S.D.	.762		.932	1.535		1.445	
Contrast	mean	12.69		11.97	8.16		4.08	
27%	S.D.	.723		1.313	2.632		.912	
	Velocity	1	2	4	8	12	16	20



Mean Peripheral Vision - degrees from fovea

Subject: DH Procedure: #3

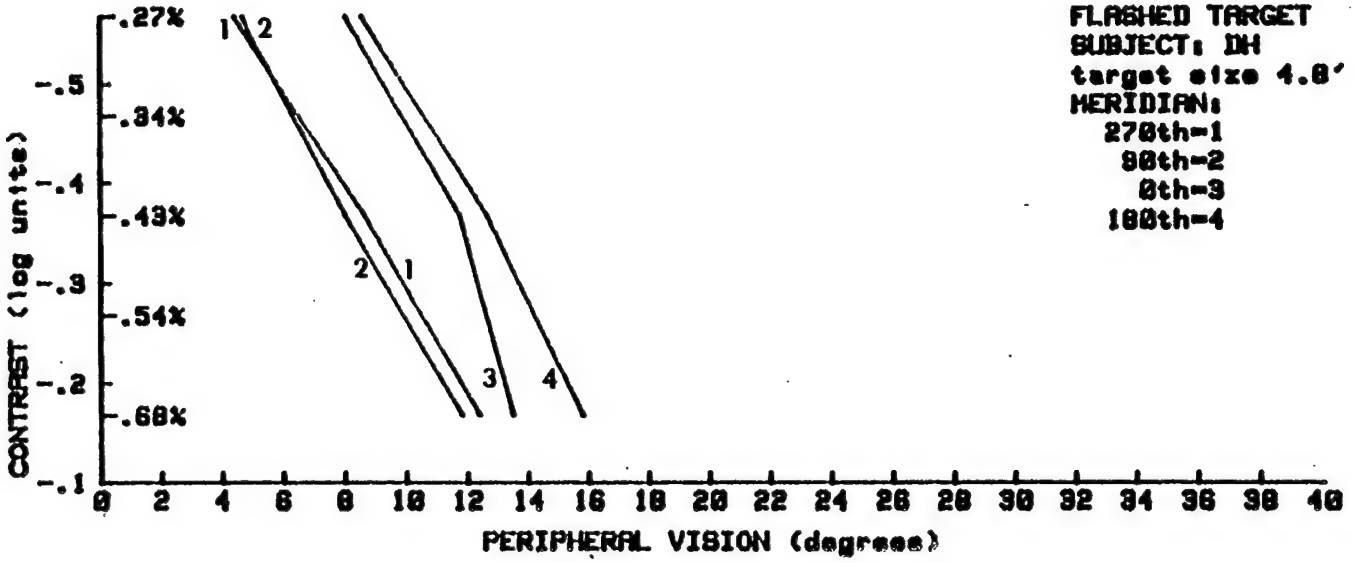
	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	13.04	11.29	9.24	6.43	3.63
	S.D.	1.183	.293	.483	1.041	.626
90th Meridian	mean	9.53	8.03	7.67	4.99	4.10
	S.D.	.553	.603	.374	.594	.300
0th Meridian	mean	13.82	12.78	10.38	7.90	4.33
	S.D.	.803	.397	.460	.977	.492
180th Meridian	mean	15.02	12.58	10.73	8.98	6.95
	S.D.	.757	.648	.583	.560	.590
	Contrast	68%	54%	43%	34%	27%



Mean Peripheral Vision - degrees from fovea

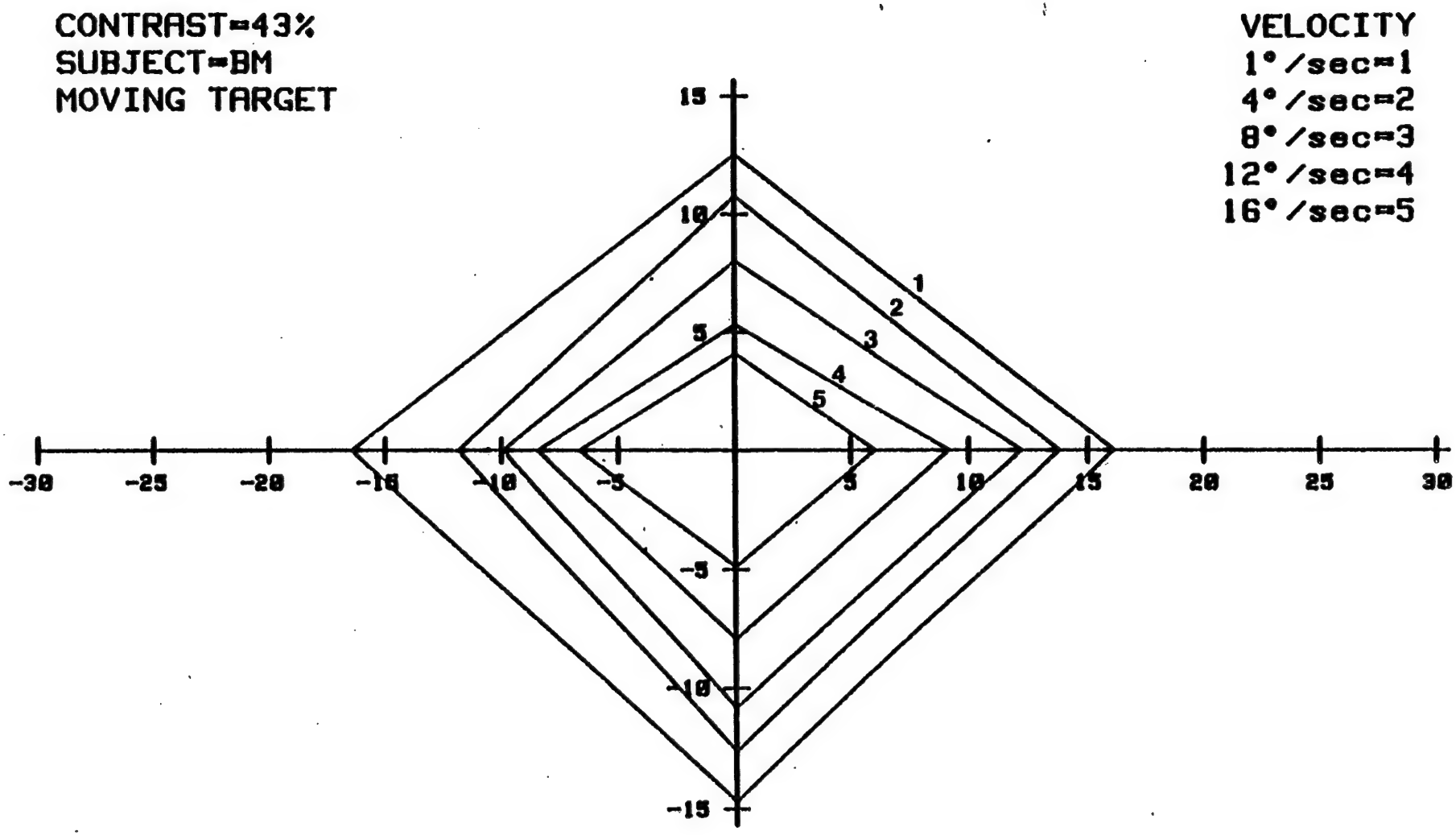
Subject: DH Procedure: #4

	Contrast	68%	54%	43%	34%	27%
270th Meridian	mean	12.41		8.67		4.43
	S.D.	.406		.507		.413
90th Meridian	mean	11.83		8.04		4.69
	S.D.	.284		.320		.547
0th Meridian	mean	13.52		11.77		8.05
	S.D.	1.298		1.238		1.112
180th Meridian	mean	15.82		12.67		8.58
	S.D.	.528		.623		.673
	Contrast	68%	54%	43%	34%	27%



APPENDIX D

Four Primary Meridian Plots for Each Subject and Procedure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8°/sec=3
12°/sec=4
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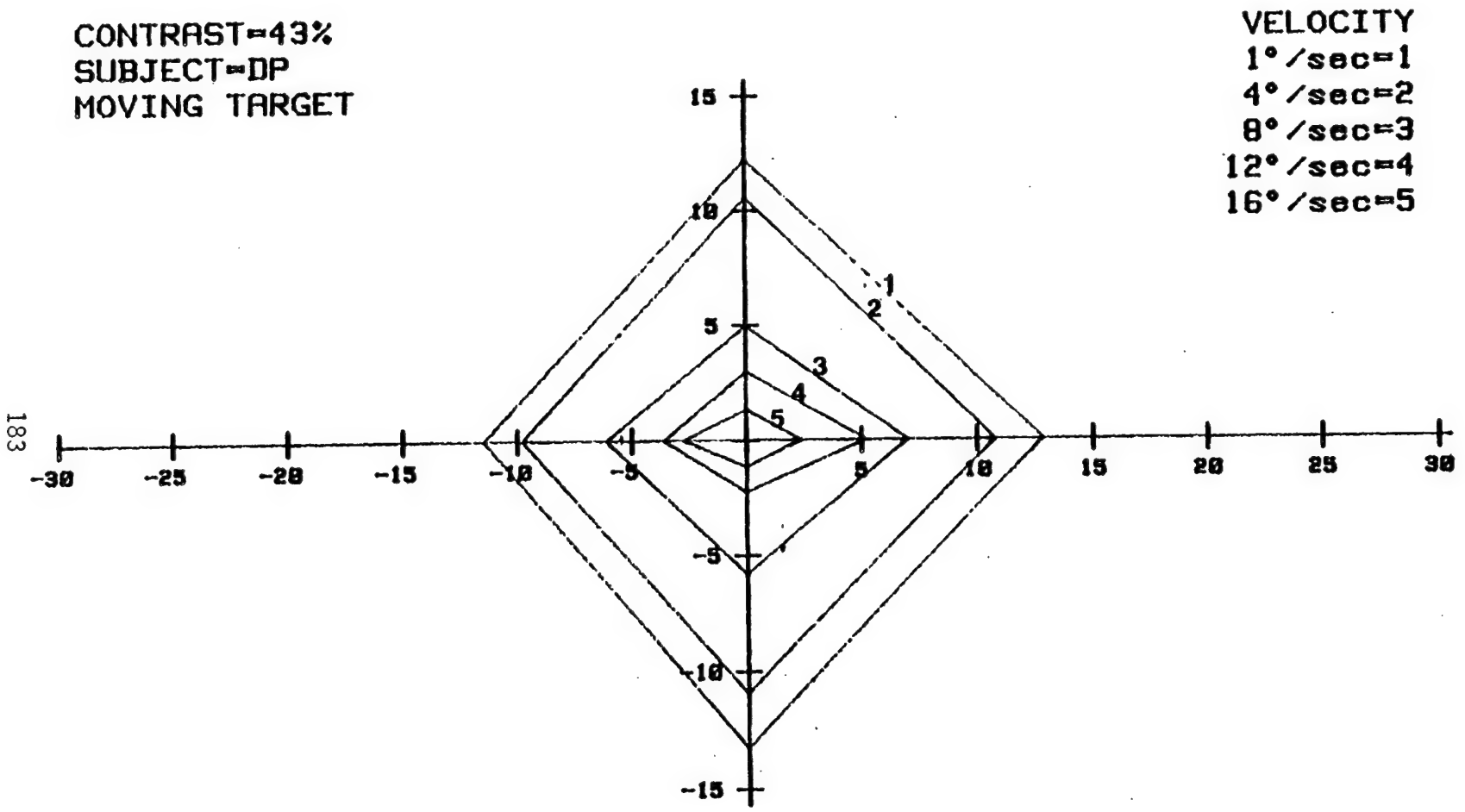
10
15
20
25
30
1
2
3
4
5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MOVING TARGET
VELOCITY
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4°/sec=2
8°/sec=3
12°/sec=4
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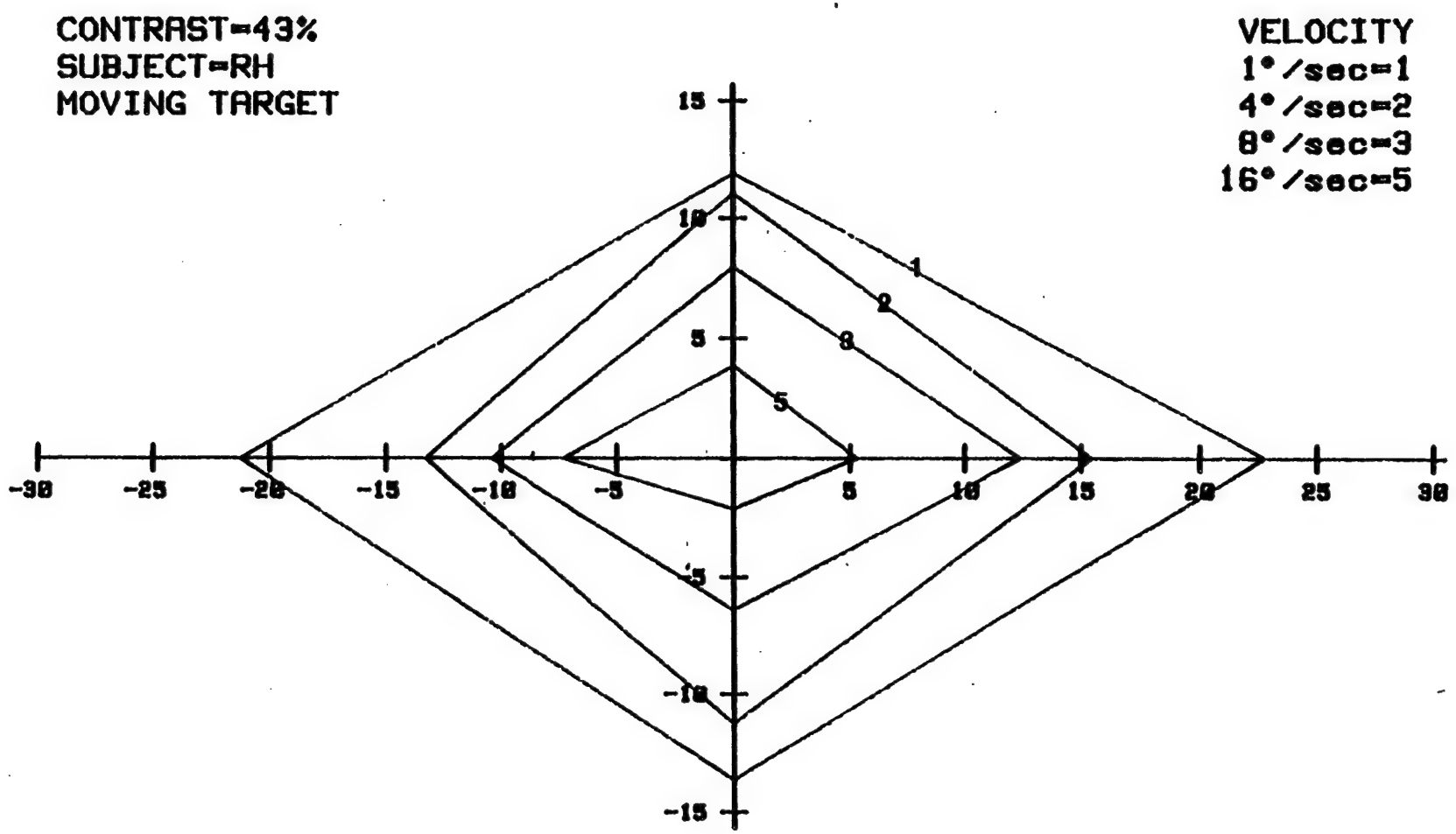
10
15
20
25
30
1
2
3
4
5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8°/sec=3
16°/sec=5
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15
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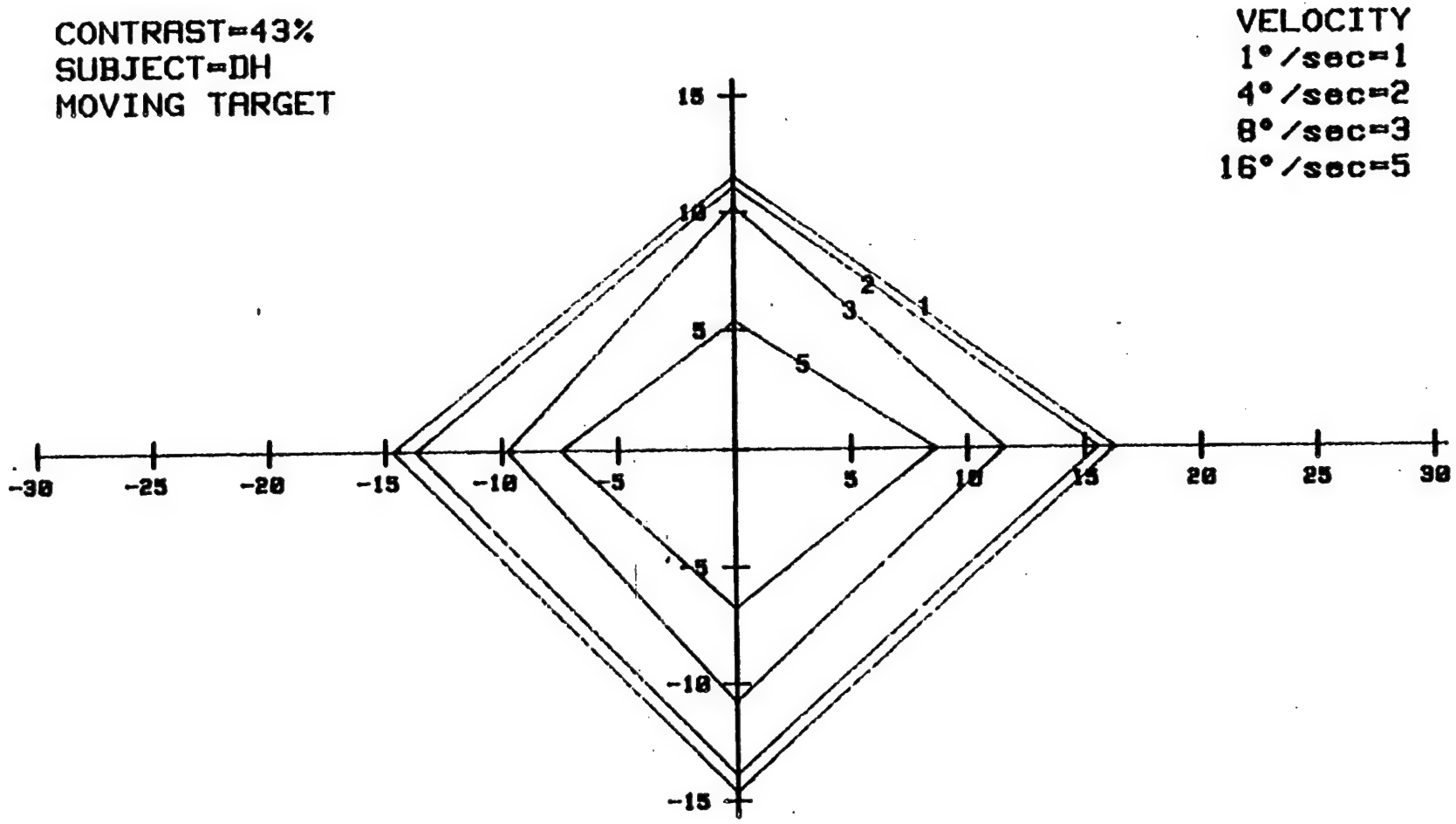
1
2
3
5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8°/sec=3
16°/sec=5
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-10
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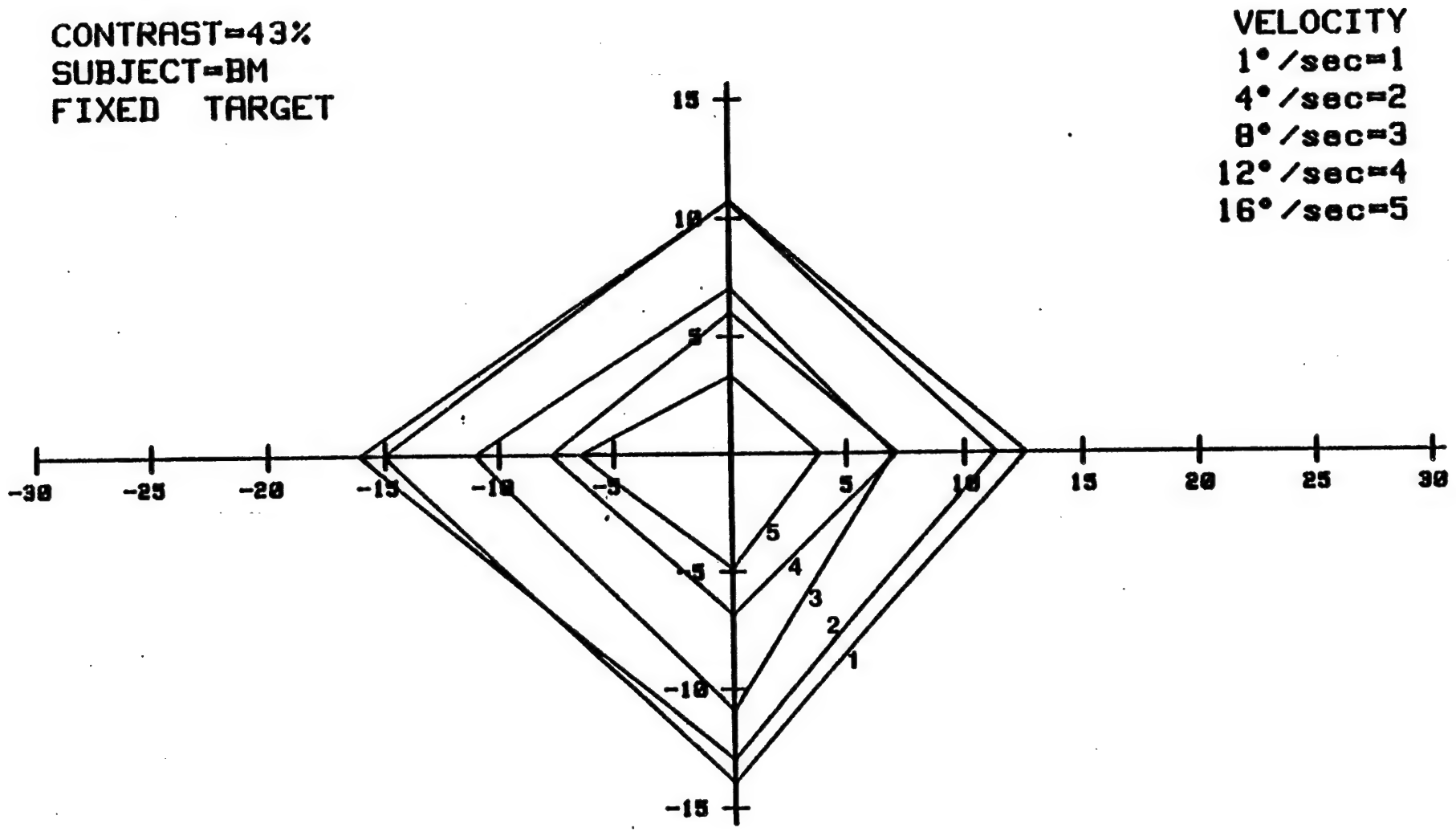
3
5
5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12°/sec=4
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15
20
25
30
1
2
3
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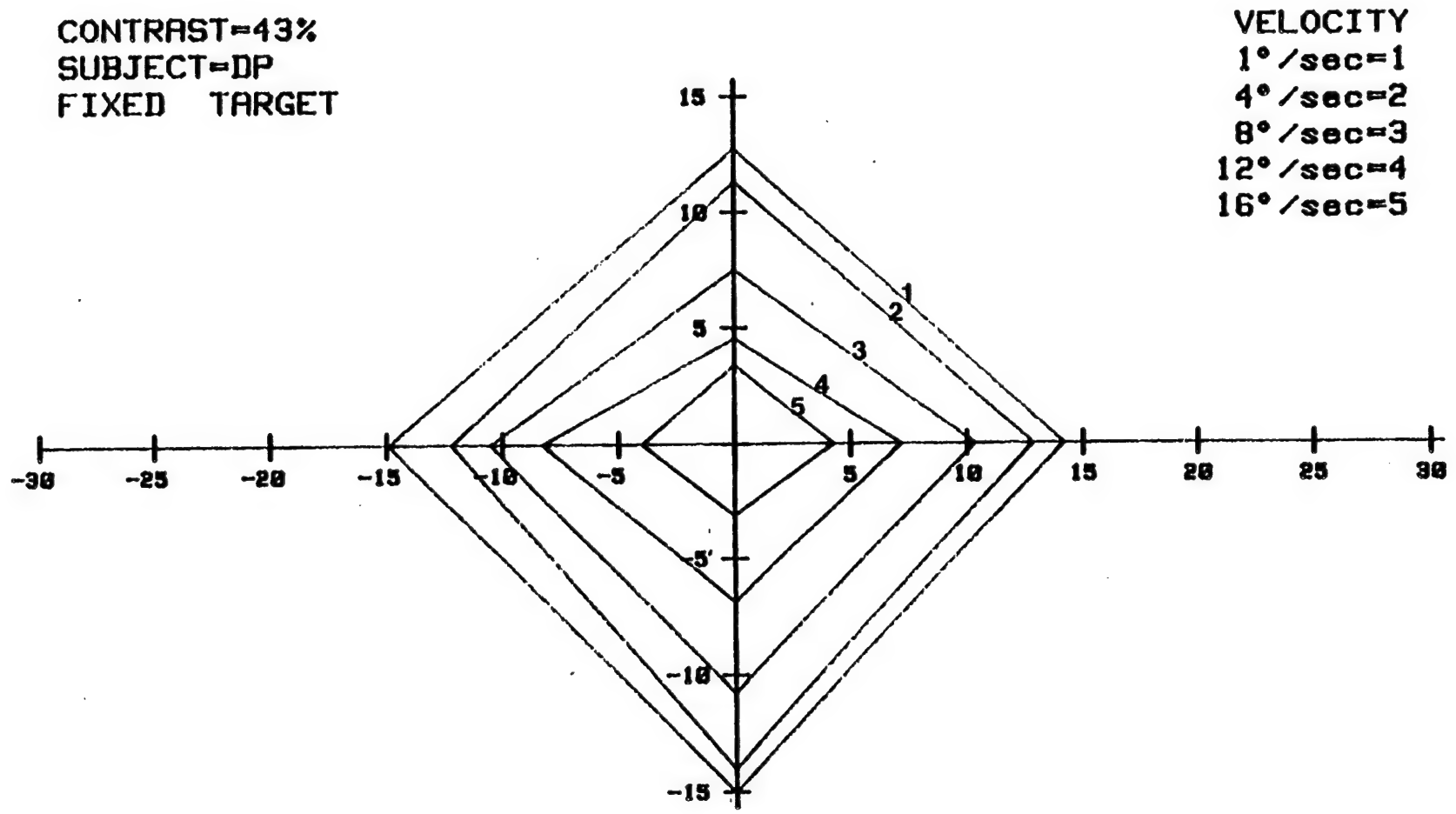
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12°/sec=4
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3
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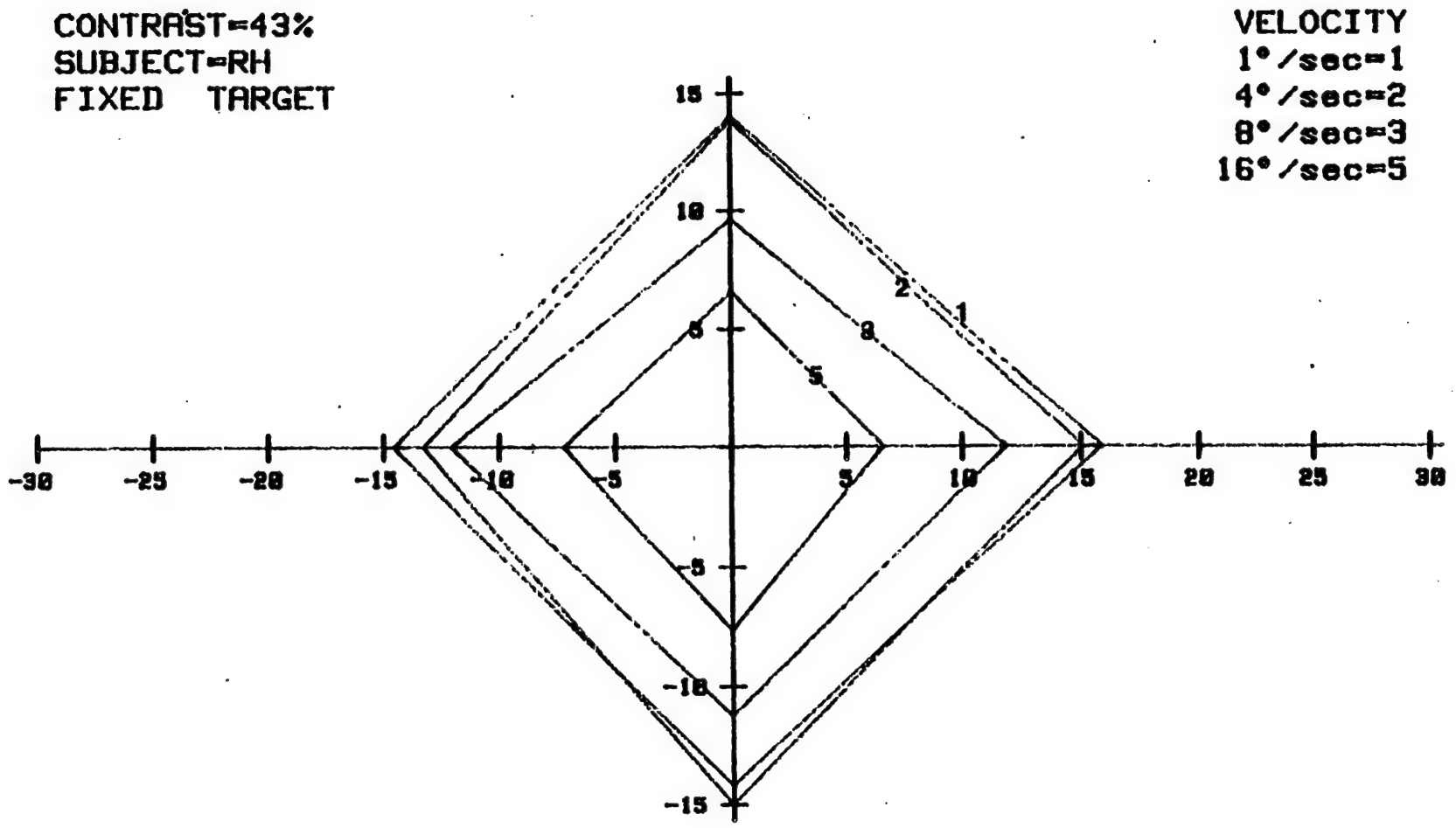
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VELOCITY
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4°/sec=2
8°/sec=3
16°/sec=5
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10
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20
25
30
1
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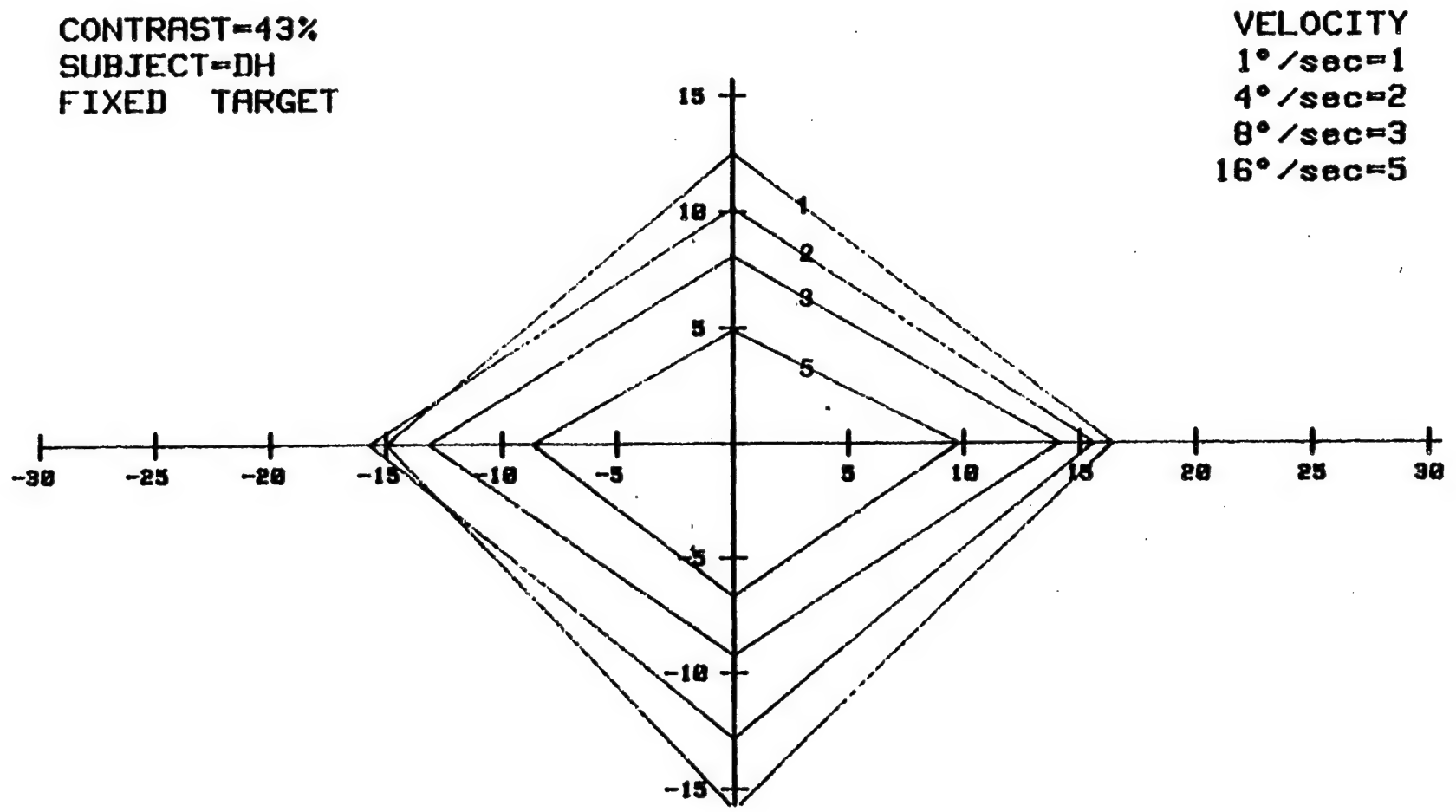
5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8°/sec=3
16°/sec=5
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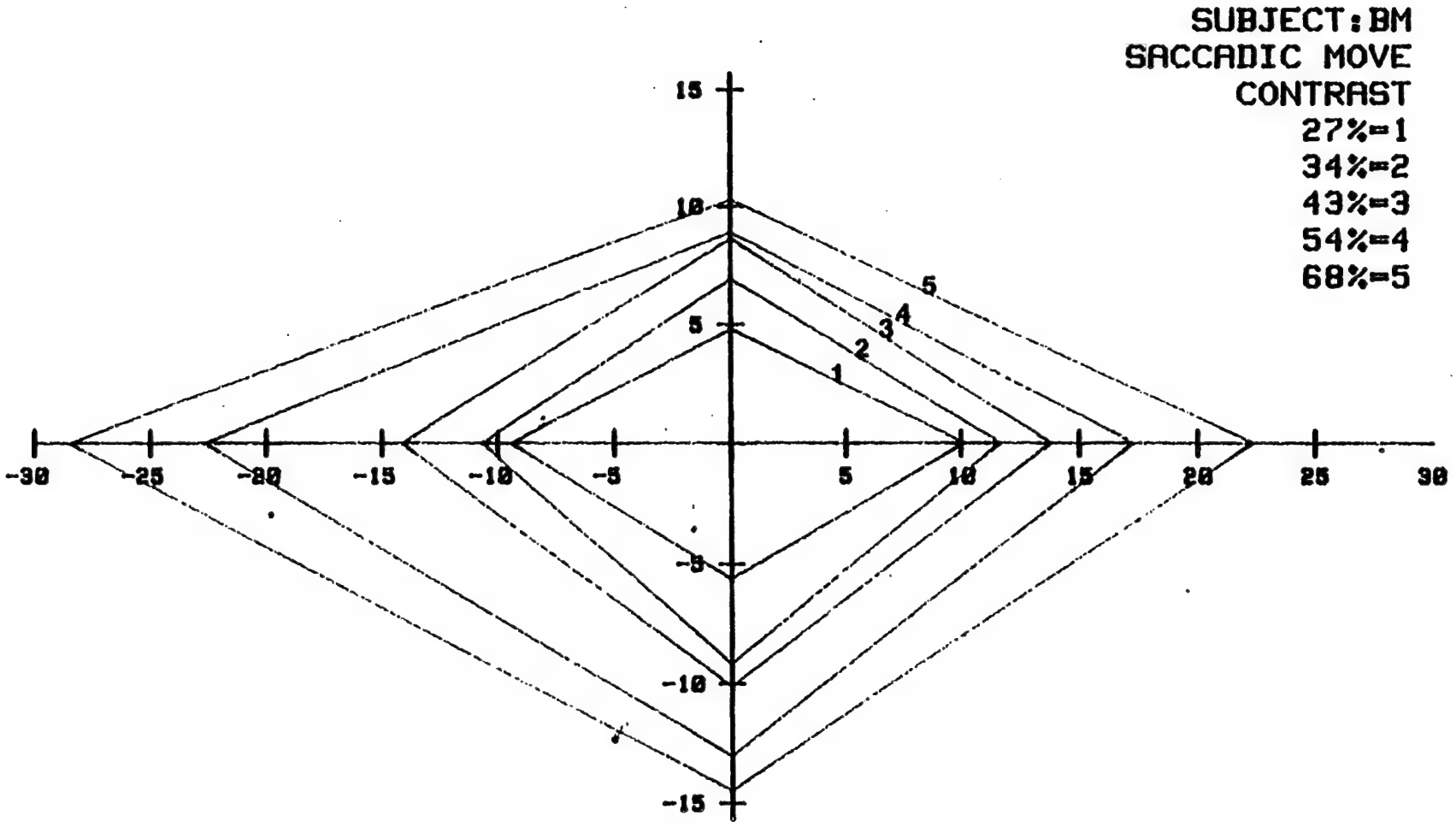
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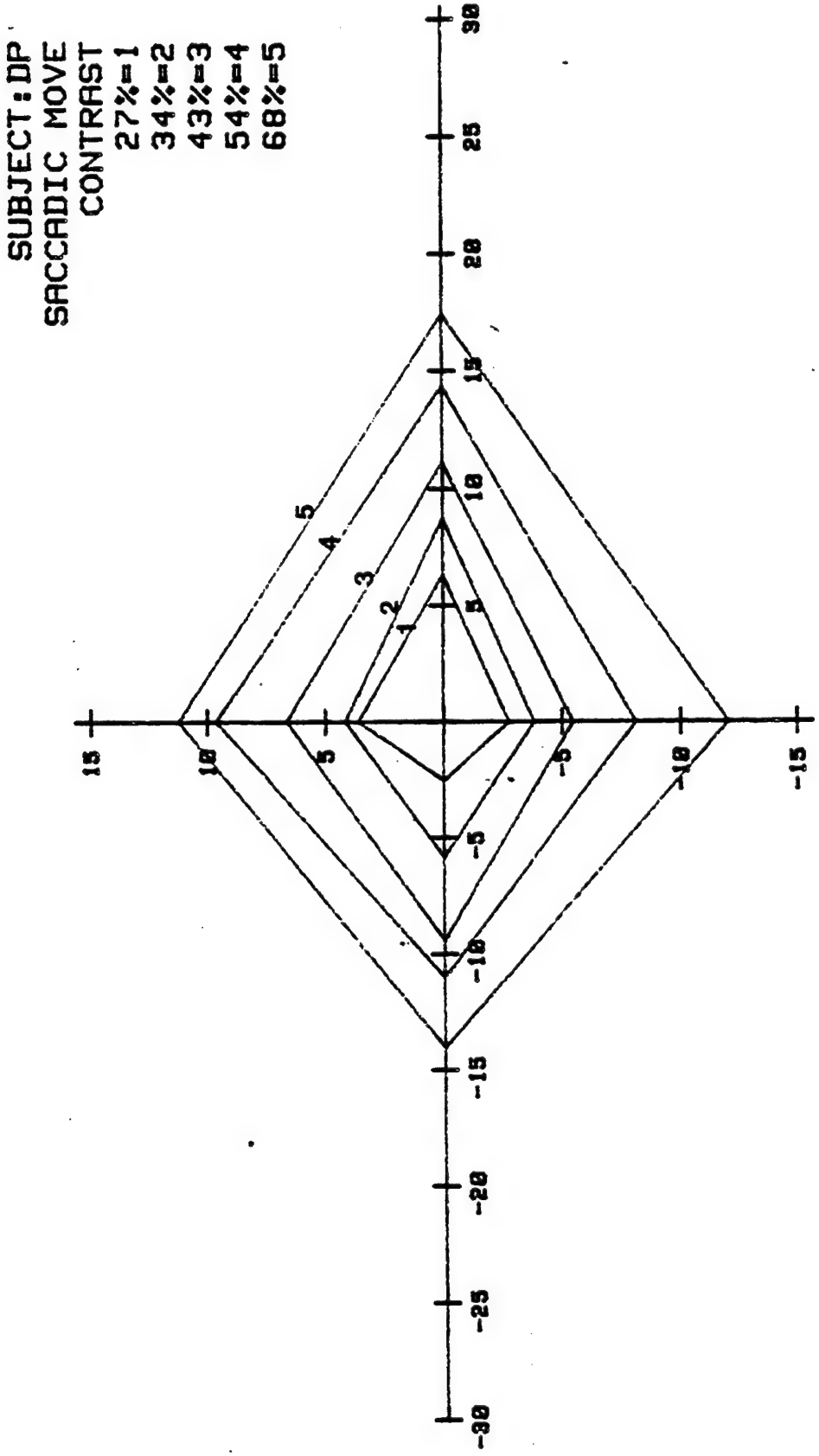
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SACCADIC MOVE
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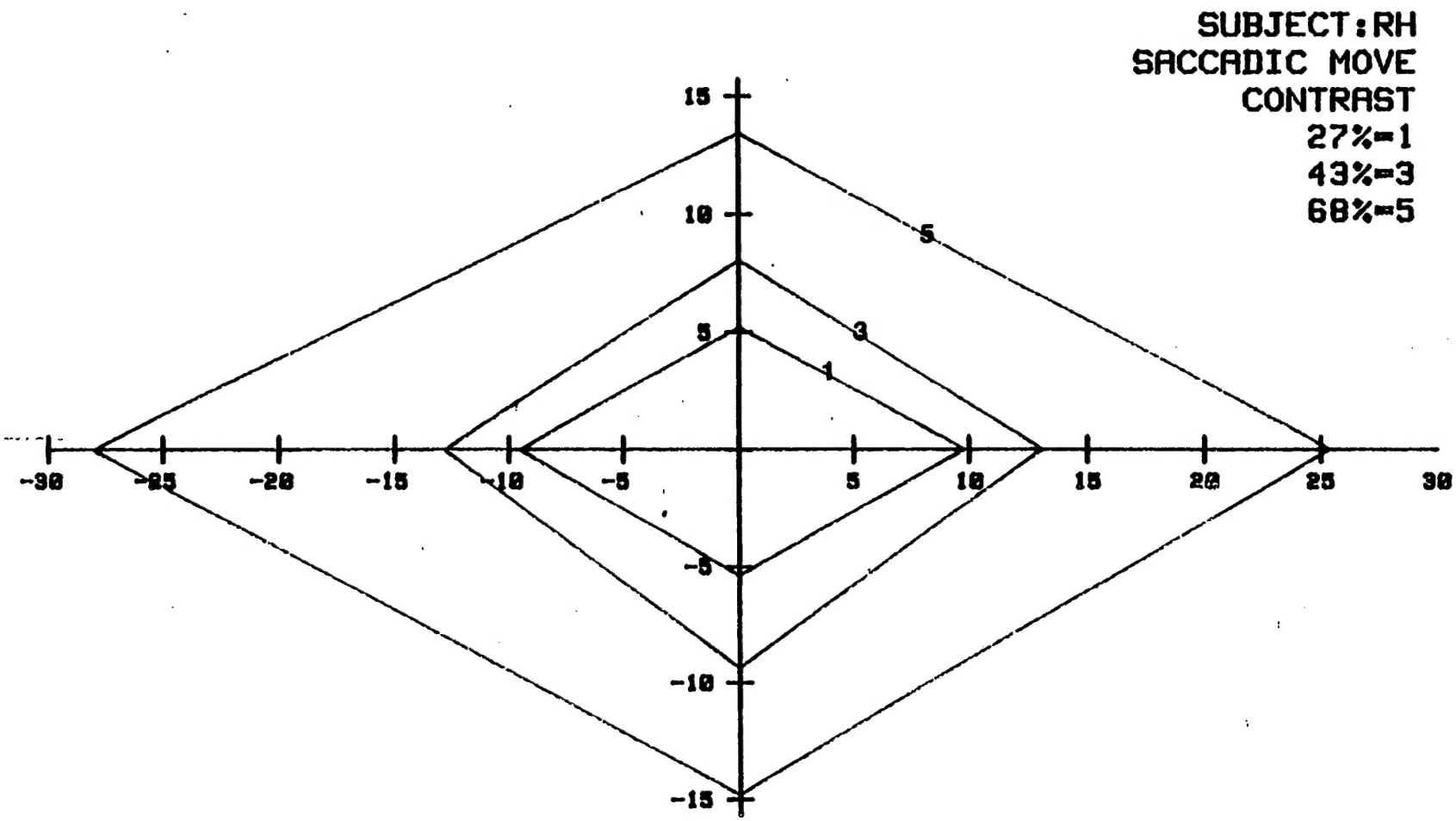
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SACCADIC MOVE
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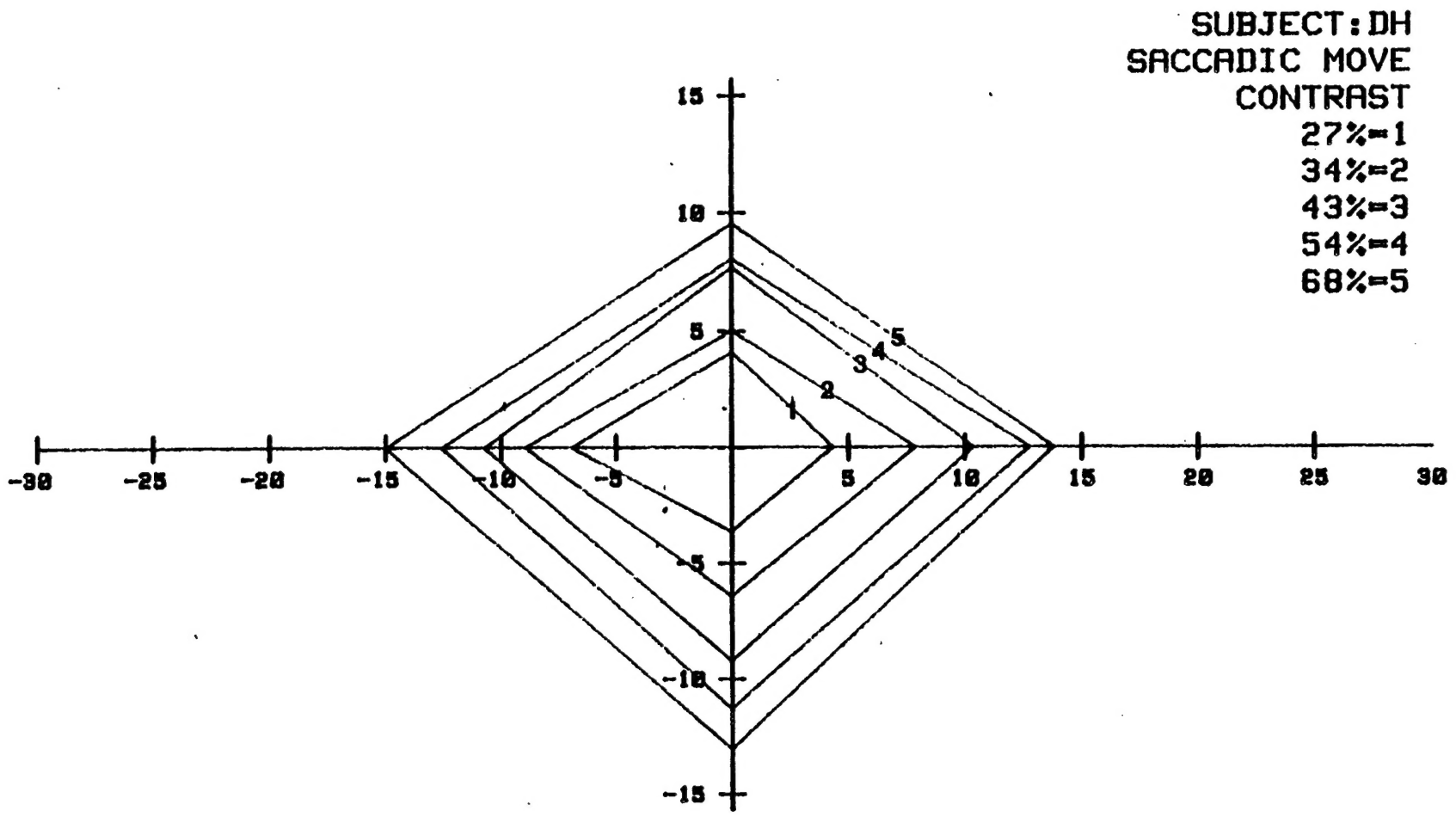
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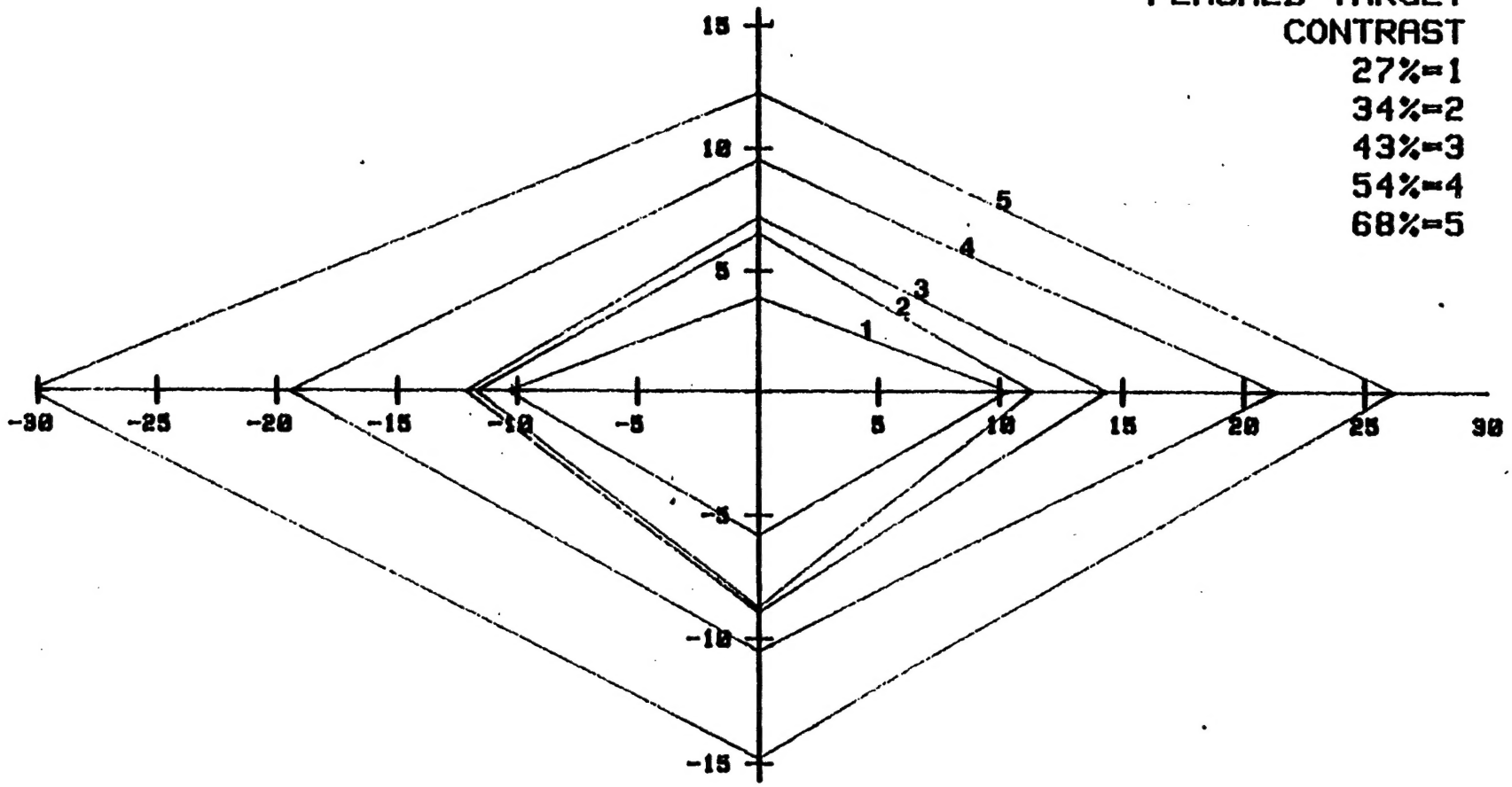
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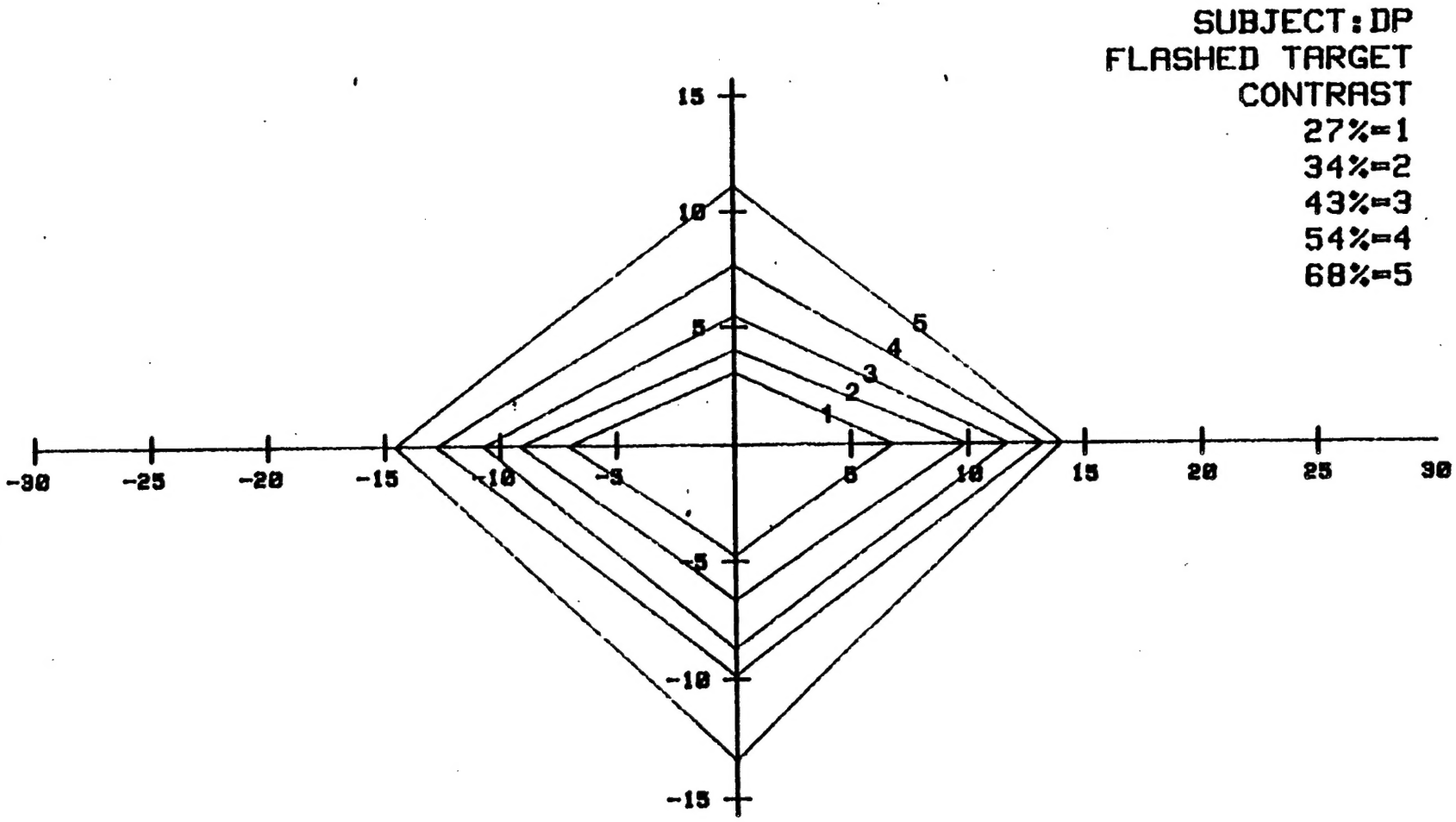
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